

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NMVOC	SO ₂
	(Gg)						
Total Energy	336,326.38	1,301.18	17.16	1,575.55	4,278.96	788.22	759.40
A. Fuel Combustion Activities (Sectoral Approach)	329,402.62	98.41	17.07	1,573.91	4,268.89	566.10	759.40
1. Energy Industries	198,168.52	9.08	2.03	648.49	65.96	8.24	587.72
a. Public Electricity and Heat Production	180,658.88	7.73	1.93	541.76	46.44	6.17	553.88
b. Petroleum Refining	6,728.83	0.09	0.05	46.23	5.65	0.09	24.00
c. Manufacture of Solid Fuels and Other Energy Industries	10,780.81	1.26	0.05	60.50	13.88	1.98	9.84
2. Manufacturing Industries and Construction	42,034.59	2.32	0.74	370.78	281.86	15.35	104.40
a. Iron and Steel	2,624.13	0.08	0.01	32.18	9.10	0.52	10.96
b. Non-Ferrous Metals	14,153.13	0.32	0.10	96.45	17.35	0.61	62.21
c. Chemicals	6,061.66	0.19	0.03	49.41	24.59	1.55	2.20
d. Pulp, Paper and Print	2,199.22	0.13	0.09	6.61	15.01	0.30	4.12
e. Food Processing, Beverages and Tobacco	3,225.83	0.95	0.42	14.31	157.45	1.71	6.61
f. Other <i>(please specify)</i>	13,770.62	0.66	0.10	171.81	58.36	10.66	18.30
All Other Manufacturing	1,404.45	0.08	0.01	7.29	14.48	1.58	0.49
Construction	3,465.83	0.28	0.03	48.92	18.92	5.23	2.84
Non-metallic Mineral Products	4,802.99	0.12	0.03	61.06	14.74	0.84	8.50
Mining (non-energy)	4,097.34	0.18	0.03	54.54	10.22	3.01	6.48
3. Transport	72,260.40	30.03	14.05	458.10	3,123.44	445.45	61.21
a. Civil Aviation	5,480.11	0.24	0.17	18.05	92.71	3.11	1.03
b. Road Transportation	63,329.27	27.26	13.79	378.41	2,892.89	417.72	42.19
c. Railways	1,823.75	0.08	0.05	40.44	5.34	1.88	3.08
d. Navigation	1,586.67	2.44	0.03	20.98	128.15	22.08	14.89
e. Other Transportation <i>(please specify)</i>	40.59	0.02	0.00	0.23	4.35	0.67	0.01
Recreational Vehicles	40.59	0.02	0.00	0.23	4.35	0.67	0.01

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NMVOC	SO ₂
	(Gg)						
4. Other Sectors	15,585.94	56.93	0.23	90.89	789.85	96.20	5.61
a. Commercial/Institutional	3,854.41	0.07	0.02	4.56	2.39	0.21	1.65
b. Residential	7,527.29	56.34	0.17	7.75	758.86	86.20	0.53
c. Agriculture/Forestry/Fisheries	4,204.23	0.52	0.04	78.58	28.60	9.79	3.43
5. Other (please specify)	1,353.17	0.05	0.02	5.65	7.78	0.85	0.46
a. Stationary 	636.47	NE	NE	NE	NE	NE	NE
Lubricants	636.47	NE	NE	NE	NE	NE	NE
b. Mobile 	716.70	0.05	0.02	5.65	7.78	0.85	0.46
Military Transport	716.70	0.05	0.02	5.65	7.78	0.85	0.46
B. Fugitive Emissions from Fuels	6,923.76	1,202.76	0.09	1.64	10.07	222.13	NE
1. Solid Fuels	NE	878.36	NA	NA	NA	NA	NA
a. Coal Mining	NE	878.36	NA	NA	NA	NA	
b. Solid Fuel Transformation	NA	IE	NA	NA	NA	NA	NA
c. Other (please specify) 	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA
2. Oil and Natural Gas	6,923.76	324.40	0.09	1.64	10.07	222.13	NE
a. Oil	400.66	5.24	0.01	0.13	1.29	104.09	NE
b. Natural Gas	9.86	173.71				31.67	NE
c. Venting and Flaring	6,513.24	145.46	0.08	1.51	8.78	86.37	NE
Venting	3,666.63	110.15				71.24	NE
Flaring	2,846.61	35.31	0.08	1.51	8.78	15.13	NE
d. Other (please specify) 	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA
Memo Items:							
International Bunkers	10,625.28	0.15	0.31	110.05	15.46	8.78	49.86
Aviation	8,151.32	0.03	0.24	43.61	13.40	6.70	1.54
Marine	2,473.96	0.12	0.07	66.44	2.06	2.08	48.33
Multilateral Operations	NE	NE	NE	NE	NE	NE	NE
CO₂ Emissions from Biomass	18,254.75						

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities—Sectoral Approach
(Sheet 1 of 4)

Australia
2001
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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)	⁽¹⁾	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
I.A. Fuel Combustion	4,657,196.32	GCV				329,402.62	98.41	17.07
Liquid Fuels	1,511,803.53	GCV	66.69	21.73	9.47	100,820.67	32.85	14.32
Solid Fuels	2,003,692.39	GCV	90.33	0.88	1.00	180,984.37	1.76	2.01
Gaseous Fuels	930,010.40	GCV	51.18	6.86	0.11	47,597.57	6.38	0.10
Biomass	211,690.00	GCV	86.23	271.32	3.06 ⁽³⁾	18,254.75	57.44	0.65
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
I.A.1. Energy Industries	2,396,549.66	GCV				198,168.52	9.08	2.03
Liquid Fuels	135,463.34	GCV	68.40	1.82	0.60	9,266.36	0.25	0.08
Solid Fuels	1,846,773.89	GCV	91.09	0.76	1.03	168,223.53	1.40	1.90
Gaseous Fuels	403,362.43	GCV	51.27	12.77	0.10	20,678.63	5.15	0.04
Biomass	10,950.00	GCV	56.58	208.34	0.63 ⁽³⁾	619.55	2.28	0.01
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
a. Public Electricity and Heat Production	2,092,933.14	GCV				180,658.88	7.73	1.93
Liquid Fuels	26,406.94	GCV	69.39	3.41	0.60	1,832.29	0.09	0.02
Solid Fuels	1,828,116.89	GCV	91.43	0.76	1.03	167,146.58	1.38	1.88
Gaseous Fuels	227,459.30	GCV	51.35	17.49	0.10	11,680.01	3.98	0.02
Biomass	10,950.00	GCV	56.58	208.34	0.63 ⁽³⁾	619.55	2.28	0.01
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
b. Petroleum Refining	103,750.00	GCV				6,728.83	0.09	0.05
Liquid Fuels	84,820.00	GCV	67.91	0.83	0.60	5,760.47	0.07	0.05
Solid Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	18,930.00	GCV	51.15	1.06	0.10	968.36	0.02	0.00
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
c. Manufacture of Solid Fuels and Other Energy Industries	199,866.53	GCV				10,780.81	1.26	0.05
Liquid Fuels	24,236.40	GCV	69.05	3.52	0.60	1,673.61	0.09	0.01
Solid Fuels	18,657.00	GCV	57.72	1.01	0.80	1,076.95	0.02	0.01
Gaseous Fuels	156,973.13	GCV	51.16	7.35	0.10	8,030.26	1.15	0.02
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA

⁽¹⁾ Gross calorific values (GCV).

⁽²⁾ Accurate estimation of CH₄ and N₂O emissions depends on combustion conditions, technology, and emission control policy, as well as fuel characteristics. Therefore, caution should be used when comparing the implied emission factors.

⁽³⁾ Carbon dioxide emissions from biomass are reported under Memo Items. The content of the cells is not included in the totals.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities—Sectoral Approach
(Sheet 2 of 4)

Australia
2001
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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption	(1)	CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)		(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
I.A.2 Manufacturing Industries and Construction	798,721.23	GCV				42,034.59	2.32	0.74
Liquid Fuels	180,843.43	GCV	67.55	4.33	0.63	12,216.65	0.78	0.11
Solid Fuels	148,938.50	GCV	80.74	1.19	0.67	12,026.01	0.18	0.10
Gaseous Fuels	348,409.30	GCV	51.07	1.08	0.10	17,791.93	0.38	0.03
Biomass	120,530.00	GCV	94.25	8.15	4.10 ⁽³⁾	11,360.47	0.98	0.49
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
a. Iron and Steel	55,794.00	GCV				2,624.13	0.08	0.01
Liquid Fuels	1,307.00	GCV	60.29	19.20	0.46	78.79	0.03	0.00
Solid Fuels	29,407.00	GCV	42.93	1.07	0.18	1,262.37	0.03	0.01
Gaseous Fuels	25,080.00	GCV	51.15	0.94	0.09	1,282.96	0.02	0.00
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
b. Non-Ferrous Metals	218,299.00	GCV				14,153.13	0.32	0.10
Liquid Fuels	35,589.00	GCV	71.92	2.88	0.75	2,559.40	0.10	0.03
Solid Fuels	59,530.00	GCV	90.88	1.24	0.80	5,410.13	0.07	0.05
Gaseous Fuels	120,880.00	GCV	51.15	1.10	0.10	6,183.60	0.13	0.01
Biomass	2,300.00	GCV	92.12	4.20	4.10 ⁽³⁾	211.88	0.01	0.01
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
c. Chemicals	105,123.23	GCV				6,061.66	0.19	0.03
Liquid Fuels	33,703.44	GCV	61.32	3.18	0.60	2,066.60	0.11	0.02
Solid Fuels	8,337.50	GCV	95.83	1.17	0.80	798.99	0.01	0.01
Gaseous Fuels	63,082.30	GCV	50.67	1.10	0.10	3,196.06	0.07	0.01
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
d. Pulp, Paper and Print	55,850.00	GCV				2,199.22	0.13	0.09
Liquid Fuels	2,940.00	GCV	66.94	2.62	0.60	196.81	0.01	0.00
Solid Fuels	7,780.00	GCV	88.20	1.30	0.80	686.20	0.01	0.01
Gaseous Fuels	25,730.00	GCV	51.15	1.19	0.10	1,316.21	0.03	0.00
Biomass	19,400.00	GCV	92.12	4.20	4.10 ⁽³⁾	1,787.13	0.08	0.08
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
e. Food Processing, Beverages and Tobacco	148,150.00	GCV				3,225.83	0.95	0.42
Liquid Fuels	6,270.00	GCV	63.17	1.25	0.60	396.09	0.01	0.00
Solid Fuels	14,750.00	GCV	90.65	1.30	0.80	1,337.04	0.02	0.01
Gaseous Fuels	29,180.00	GCV	51.15	1.14	0.10	1,492.70	0.03	0.00
Biomass	97,950.00	GCV	94.75	9.06	4.10 ⁽³⁾	9,280.40	0.89	0.40
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
f. Other (please specify)	215,504.99	GCV				13,770.62	0.66	0.10
Liquid Fuels	101,033.99	GCV	68.48	5.28	0.60	6,918.95	0.53	0.06
Solid Fuels	29,134.00	GCV	86.88	1.12	0.77	2,531.28	0.03	0.02
Gaseous Fuels	84,457.00	GCV	51.15	1.04	0.10	4,320.39	0.09	0.01
Biomass	880.00	GCV	92.12	4.20	4.10 ⁽³⁾	81.07	0.00	0.00
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities—Sectoral Approach
(Sheet 3 of 4)

Australia
2001
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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption	(1)	CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)		(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.3 Transport	1,089,546.92	GCV				72,260.40	30.03	14.05
Gasoline	688,348.65	GCV	65.75	33.81	19.28	45,262.04	23.27	13.27
Diesel	316,166.91	GCV	69.09	7.46	1.94	21,844.52	2.36	0.61
Natural Gas	4,628.67	GCV	51.40	128.61	1.00	237.91	0.60	0.00
Solid Fuels	4,870.00	GCV	89.10	32.00	1.00	433.92	0.16	0.00
Biomass	0.00	GCV	0.00	0.00	0.00 ⁽³⁾	0.00	0.00	0.00
Other Fuels	75,532.70	GCV	59.34	48.22	2.06	4,482.00	3.64	0.16
a. Civil Aviation	79,503.70	GCV				5,480.11	0.24	0.17
Aviation Gasoline	3,493.30	GCV	67.32	57.00	0.90	235.17	0.20	0.00
Jet Kerosene	76,010.40	GCV	69.00	0.48	2.22	5,244.95	0.04	0.17
b. Road Transportation	961,513.18	GCV				63,329.27	27.26	13.79
Gasoline	608,844.95	GCV	65.34	37.84	21.52	39,781.93	23.04	13.10
Diesel Oil	278,769.57	GCV	69.00	7.99	1.93	19,235.94	2.23	0.54
Natural Gas	4,628.67	GCV	51.40	128.61	1.00	237.91	0.60	0.00
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels (please specify) 	69,270.00	GCV				4,073.49	1.39	0.15
LPG	69,270.00	GCV	58.81	20.11	2.17	4,073.49	1.39	0.15
c. Railways	26,430.00	GCV				1,823.75	0.08	0.05
Solid Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
Liquid Fuels	26,430.00	GCV	69.00	3.00	2.00	1,823.75	0.08	0.05
Other Fuels (please specify) 	NA	GCV				NA	NA	NA
Natural Gas	NA	GCV	NA	NA	NA	NA	NA	NA
d. Navigation	21,478.77	GCV				1,586.67	2.44	0.03
Coal	4,870.00	GCV	89.10	32.00	1.00	433.92	0.16	0.00
Residual Oil	7,856.07	GCV	72.86	3.00	2.00	572.42	0.02	0.02
Gas/Diesel Oil	2,490.00	GCV	69.00	4.00	2.00	171.82	0.01	0.00
Other Fuels (please specify) 	6,262.70	GCV				408.51	2.25	0.01
Gasoline	6,212.70	GCV	65.34	360.00	0.90	405.94	2.24	0.01
Natural Gas	50.00	GCV	51.40	243.00	1.00	2.57	0.01	0.00
e. Other Transportation	621.27	GCV				40.59	0.02	0.00
Liquid Fuels	621.27	GCV	65.34	30.00	0.90	40.59	0.02	0.00
Solid Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	NA	GCV	NA	NA	NA	NA	NA	NA

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities—Sectoral Approach
(Sheet 4 of 4)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption	(1)	CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)		(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.4 Other Sectors	353,320.16	GCV				15,585.94	56.93	0.23
Liquid Fuels	96,390.16	GCV	66.35	25.82	0.62	6,395.93	2.49	0.06
Solid Fuels	3,110.00	GCV	96.76	6.64	0.80	300.91	0.02	0.00
Gaseous Fuels	173,610.00	GCV	51.20	1.46	0.11	8,889.10	0.25	0.02
Biomass	80,210.00	GCV	78.23	675.38	1.83 ⁽³⁾	6,274.73	54.17	0.15
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
a. Commercial/Institutional	70,060.00	GCV				3,854.41	0.07	0.02
Liquid Fuels	15,470.00	GCV	61.26	0.77	0.60	947.69	0.01	0.01
Solid Fuels	2,950.00	GCV	96.67	1.30	0.80	285.18	0.00	0.00
Gaseous Fuels	51,210.00	GCV	51.19	1.11	0.15	2,621.55	0.06	0.01
Biomass	430.00	GCV	91.92	3.70	4.10 ⁽³⁾	39.53	0.00	0.00
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
b. Residential	222,180.16	GCV				7,527.29	56.34	0.17
Liquid Fuels	19,860.16	GCV	62.69	98.62	0.68	1,245.03	1.96	0.01
Solid Fuels	160.00	GCV	98.31	105.00	0.80	15.73	0.02	0.00
Gaseous Fuels	122,380.00	GCV	51.21	1.60	0.10	6,266.53	0.20	0.01
Biomass	79,780.00	GCV	78.15	679.00	1.82 ⁽³⁾	6,235.20	54.17	0.15
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
c. Agriculture/Forestry/Fisheries	61,080.00	GCV				4,204.23	0.52	0.04
Liquid Fuels	61,060.00	GCV	68.84	8.48	0.60	4,203.21	0.52	0.04
Solid Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	20.00	GCV	51.15	1.10	0.10	1.02	0.00	0.00
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
1.A.5 Other (Not elsewhere specified) ⁽⁴⁾	19,058.35	GCV				1,353.17	0.05	0.02
Liquid Fuels	19,058.35	GCV	71.00	2.75	1.05	1,353.17	0.05	0.02
Solid Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	NA	GCV	NA	NA	NA	NA	NA	NA
Biomass	NA	GCV	NA	NA	NA ⁽³⁾	NA	NA	NA
Other Fuels	NA	GCV	NA	NA	NA	NA	NA	NA

⁽⁴⁾ Military fuel use is included under this category.

Documentation Box:

1A1c Manufacturing of Solid Fuels and Other Energy Industries includes a derived gas, coke oven gas, which is allocated to solid fuels. The carbon dioxide emission factor used for coke oven gas was 37.0 Gg/PJ (oxidation factor of 99.5%) and for black coal was 91.8 Gg/PJ (oxidation factor of 98.0%).

1A2f Other includes: Mining (non-energy minerals); Non-metallic mineral products; All other Manufacturing; and Construction.

1A5 Lubricants and Military transport emissions.

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO₂ from Fuel Combustion Activities—Reference Approach (IPCC Worksheet 1-1)
(Sheet 1 of 1)

Australia
2001
Submission 2003

FUEL TYPES			Unit	Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor ⁽¹⁾ (TJ/Unit)	⁽¹⁾	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidized	Actual CO ₂ emissions (Gg CO ₂)
Liquid Fossil	Primary Fuels	Crude Oil	PJ	1,432.10	1,019.47	889.62		-121.65	1,683.60	1,000.00	GCV	1,683,597.00	18.60	31,314.90	0.00	31,314.90	0.99	113,673.10
		Orimulsion	PJ	NO	NO	NO		NA	0.00	NA	GCV	0.00	NA	0.00	NO	0.00	NA	0.00
		Natural Gas Liquids	PJ	107.49	16.79	71.57		7.41	45.30	1,000.00	GCV	45,301.43	16.20	733.88	0.00	733.88	0.99	2,664.00
	Secondary Fuels	Gasoline	PJ		40.65	46.51	0.00	-1.74	-4.12	1,000.00	GCV	-4,122.32	18.03	-74.31	0.00	-74.31	0.99	-269.76
		Jet Kerosene	PJ		14.27	27.80	118.10	1.30	-132.93	1,000.00	GCV	-132,930.56	19.01	-2,526.89	0.00	-2,526.89	0.99	-9,172.61
		Other Kerosene	PJ		0.00	0.37	0.00	0.22	-0.59	1,000.00	GCV	-592.86	19.01	-11.27	0.00	-11.27	0.99	-40.91
		Shale Oil	PJ		NO	NO		NA	0.00	NA	GCV	0.00	NA	0.00	NO	0.00	NA	0.00
		Gas / Diesel Oil	PJ		43.58	48.97	4.70	-16.93	6.84	1,000.00	GCV	6,840.08	19.01	130.02	NA	130.02	0.99	471.99
		Residual Fuel Oil	PJ		33.21	28.87	29.50	-20.38	-4.79	1,000.00	GCV	-4,787.86	20.10	-96.23	0.00	-96.23	0.99	-349.31
		LPG	PJ		NA	NA		NA	0.00	NA	GCV	0.00	16.20	0.00	NA	0.00	NA	0.00
		Ethane	PJ		0.00	0.00		0.00	0.00	1,000.00	GCV	0.00	15.41	0.00	226.40	-226.40	1.00	-830.15
		Naphtha	PJ		0.00	0.00		0.00	0.00	1,000.00	GCV	0.00	17.98	0.00	NA	0.00	1.00	0.00
		Bitumen	PJ		1.49	0.11		-0.17	1.54	1,000.00	GCV	1,543.73	22.01	33.98	624.18	-590.20	1.00	-2,164.07
		Lubricants	PJ		1.29	10.80	0.00	-0.24	-9.27	1,000.00	GCV	-9,271.18	20.10	-186.35	258.96	-445.31	1.00	-1,632.81
		Petroleum Coke	PJ		10.43	0.00		0.00	10.43	1,000.00	GCV	10,430.00	22.01	229.55	229.55	0.00	1.00	0.00
		Refinery Feedstocks	PJ		NA	NA		NA	0.00	NA	GCV	0.00	NA	0.00	NO	0.00	NA	0.00
		Other Oil	PJ		16.61	5.61		3.54	7.46	1,000.00	GCV	7,461.12	18.60	138.78	580.00	-441.22	1.00	-1,617.80
Liquid Fossil Totals												1,603,468.58		29,686.07	1,919.09	27,766.97		100,731.66
Solid Fossil	Primary Fuels	Anthracite	PJ	NO	NO	NO		NA	0.00	NA	GCV	0.00	NA	0.00	NO	0.00	NA	0.00
		Coking Coal	PJ	NA	NA	NA		NA	0.00	NA	GCV	0.00	NA	0.00	2,648.29	-2,648.29	1.00	-9,710.41
		Other Bit. Coal	PJ	6,878.50	0.00	5,517.60	0.00	-51.00	1,411.90	1,000.00	GCV	1,411,900.00	24.70	34,868.71	0.00	34,868.71	1.00	127,851.94
		Sub-bit. Coal	PJ	NA	NA	NA	NA	NA	0.00	NA	GCV	0.00	NA	0.00	NA	0.00	NA	0.00
		Lignite	PJ	664.70	0.00	0.00		0.00	664.70	1,000.00	GCV	664,700.00	25.25	16,784.85	0.00	16,784.85	1.00	61,544.47
		Oil Shale	PJ	0.00	0.00	0.00		0.00	0.00	NA	GCV	0.00	NA	0.00	NA	0.00	NA	0.00
		Peat	PJ	NO	NO	NO		NA	0.00	NA	GCV	0.00	NA	0.00	NO	0.00	NA	0.00
	Secondary Fuels	BKB & Patent Fuel	PJ		0.00	0.02		-1.50	1.48	1,000.00	GCV	1,480.00	28.64	42.38	0.00	42.38	0.99	153.85
		Coke Oven/Gas Coke	PJ		0.00	0.50		6.80	-7.30	1,000.00	GCV	-7,300.00	32.59	-237.91	0.00	-237.91	0.99	-863.63
Solid Fuel Totals												2,070,780.00		51,458.03	2,648.29	48,809.74		178,976.21
Gaseous Fossil		Natural Gas (Dry)	PJ	1,386.90	0.00	409.60		0.00	977.30	1,000.00	GCV	977,300.00	14.05	13,734.16	450.09	13,284.07	1.00	48,464.71
Total												4,651,548.58		94,878.26	5,017.48	89,860.78		328,172.58
Biomass total												211,690.00		5,394.12	0.00	5,394.12		19,390.22
		Solid Biomass	NA	202.19	0.00	0.00		0.00	202.19	1,000.00	GCV	202,190.00	26.02	5,260.62	0.00	5,260.62	0.98	18,903.15
		Liquid Biomass	NA	0.00	0.00	0.00		0.00	0.00	1,000.00	GCV	0.00	25.64	0.00	0.00	0.00	0.98	0.00
		Gas Biomass	NA	9.50	NA	NA		NA	9.50	1,000.00	GCV	9,500.00	14.05	133.51	0.00	133.51	0.995	487.07

⁽¹⁾ Gross calorific values (GCV)

TABLE 1.A(c) COMPARISON OF CO₂ EMISSIONS FROM FUEL COMBUSTION
(Sheet 1 of 1)

Australia
2001
Submission 2003

FUEL TYPES	Reference approach		National approach ⁽¹⁾		Difference	
	Energy consumption (PJ)	CO ₂ emissions (Gg)	Energy consumption (PJ)	CO ₂ emissions (Gg)	Energy consumption (%)	CO ₂ emissions (%)
Liquid Fuels (excluding international bunkers)	1,603.47	100,731.66	1,511.80	100,820.67	6.06	-0.09
Solid Fuels (excluding international bunkers)	2,070.78	178,976.21	2,003.69	180,984.37	3.35	-1.11
Gaseous Fuels	977.30	48,464.71	930.01	47,597.57	5.08	1.82
Other ⁽²⁾	NA	NA	NA	NA	NA	NA
Total ⁽²⁾	4,651.55	328,172.58	4,445.51	329,402.62	4.63	-0.37

⁽¹⁾ "National approach" is used to indicate the approach (if different from the Reference approach) followed by the Party to estimate its CO₂ emissions from fuel combustion reported in the national greenhouse gas Inventory.

⁽²⁾ Emissions from biomass are not included.

Note: In addition to estimating CO₂ emissions from fuel combustion by sector, Parties should also estimate these emissions using the IPCC Reference Approach as found in the IPCC Guidelines, Worksheet 1-1(Volume 2. Workbook). The Reference Approach is to assist in verifying the sectoral data. Parties should also complete the above tables to compare the alternative estimates, and if the emission estimates lie more than 2 percent apart, should explain the source of this difference in the documentation box provided.

Documentation Box:


Three main reasons explain the difference between the Reference Approach and the National Approach as displayed in the above table and Table 1A(b):

- 1) Partly an artefact caused by deficiencies in the design of Tables 1.A(b) and 1.A(d). The CRF doesn't allow for the subtraction of the energy content of the fuels whose carbon is sequestered. It only allows for the subtraction of the sequestered carbon and carbon emitted elsewhere, i.e. in other sectors. Therefore, the energy consumption reported using this method for the Reference Approach includes energy which is netted out of the National Approach. The energy consumption for the Reference Approach and the National Approach will, therefore, never balance using the CRF tables in their current format.
- 2) The CRF tables assume that all ethane is sourced from oil refineries, derived from crude oil. This is false. In Australia, all ethane supplied to the chemical industry is sourced from gas wells, separated from methane at gas processing plants. It is therefore classed as a gaseous fuel, not a liquid fuel.
- 3) The defect described under point (1) also leads to slight discrepancies in both emission factors and oxidation factors between the two approaches for a number of individual fuel types.

In Table 1.A(b) Gas Biomass is Biogas sourced from Waste Landfills and is assumed to be used for electricity generation.

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks and Non-Energy Use of Fuels
(Sheet 1 of 1)

Australia
2001
Submission 2003

FUEL TYPE	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	of carbon stored in non-energy use of fuels (Gg C)
Naphtha	0.00	NA	NA	NA
Lubricants	21,590.00	0.75	15.99	258.96
Bitumen	28,360.00	0.60	36.68	624.18
Coal Oils and Tars (from Coking Coal)	4,910.00	0.75	22.09	81.35
Natural Gas	0.00	NA	NA	NA
Gas/Diesel Oil	0.00	NA	NA	NA
LPG	0.00	NA	NA	NA
Butane	0.00	NA	NA	NA
Ethane	28,360.00	NA	NA	226.40
Other (please specify) 				
Natural gas distribution and leakage	10,712.87	NA	NA	150.21
Natural gas used in reduction of iron ore	21,500.00	NA	NA	299.88
Coke used in reduction of iron ore	80,370.00	NA	NA	2,566.94
Petroleum Products Used as Feedstocks	16,976.56	NA	NA	314.09
Oil Refinery Flaring	4,890.00	0.00	0.00	91.49
Petroleum Coke for Anodes	10,430.00	0.00	0.00	229.55
Solvents	9,690.00	0.75	24.00	174.42

Additional information

CO ₂ not emitted (Gg CO ₂)	Subtracted from energy sector (specify source category)
NA	NA
949.53	1.A.5. Other
2,288.65	1.A.5. Other
298.28	1.A.2.c. Chemicals
NA	1.A.1.c. Other Energy Industries
NA	NA
NA	NA
NA	NA
830.15	1.A.2.c. Chemicals
550.77	1.A.1.c. Manufacture of Solid Fuels and Other Energy Industries
1,099.57	1.A.2.a. Iron and Steel
9,412.13	1.A.2.a. Iron and Steel
1,151.66	1.A.2.c. Chemicals
335.45	1.A.1.b. Petroleum Refining
841.70	1.A.2.b. Non-Ferrous Metals
639.54	1.A.5. Other


Documentation box: A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during the use of the energy carriers in the industrial production (e.g. fertilizer production), or during the use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions use the above table, filling an extra "Additional information" table, as shown below.		
Associated CO ₂ emissions (Gg)	Allocated under (Specify source category)  ^(a)	^(a) e.g. Industrial Processes, Waste Incineration, etc.
9,412.13	2.C.1. Iron and Steel Production	
1,099.57	2.C.1. Iron and Steel Production	
335.45	1.B.2.a. Oil: iv. Refining / Storage	
841.70	2.C.3. Aluminium Production	
213.18	Waste Incineration	
Not oxidised: emitted as CH ₄ and some CO ₂	1.B.2.b. Natural Gas ii. Distribution	

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Solid Fuels
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR		EMISSIONS	
	Amount of fuel produced	CH ₄	CO ₂	CH ₄	CO ₂
	(Mt)	(kg/t)	(kg/t)	(Gg)	(Gg)
I. B. 1. a. Coal Mining and Handling	312.13			878.36	NE
i. Underground Mines	92.46	6.33	NA	584.86	NE
Mining Activities		5.99	NA	553.65	NE
Post-Mining Activities		0.34	NA	31.21	NE
ii. Surface Mines	219.67	1.34	NA	293.49	NE
Mining Activities		1.34	NA	293.49	NE
Post-Mining Activities		NA	NA	NE	NE
I. B. 1. b. Solid Fuel Transformation	IE	NA	NA	IE	NA
I. B. 1. c. Other (please specify)				NA	NA
NA	NA	NA	NA	NA	NA

Additional information ^(a)

Description	Value
Amount of CH ₄ drained (recovered) and utilized or flared (Gg)	C
Number of active underground mines	49
Number of mines with drainage (recovery) systems	4

^(a) For underground mines.

Documentation box:
Run-of-mine data used
I.B.1.b. Solid Fuel Transformation is reported in 2.C.1. Iron and Steel Production
Data on methane recovered, utilised or flared is Confidential

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Oil and Natural Gas
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			IMPLIED EMISSION FACTORS			EMISSIONS		
	Description	Unit	Value	CO ₂ (kg/unit)	CH ₄ (kg/unit)	N ₂ O (kg/unit)	CO ₂ (Gg)	CH ₄ (Gg)	N ₂ O (Gg)
1. B. 2. a. Oil							400.66	5.24	0.01
i. Exploration	NA	NA	NA	NA	NA		169.85	2.08	0.005
ii. Production	Crude oil and ORF produced	PJ	1,432.10	NA	600.87		NA	0.86	
iii. Transport	Quantity shipped	PJ	306.00	NA	745.00		NA	0.23	
iv. Refining / Storage	Oil refined	PJ	1,676.55	137,668.43	1,235.00		230.81	2.07	0.01
v. Distribution of oil products	Petrol, Diesel and Avgas sales	PJ	1,124.65	NA	NA		NA	NA	
vi. Other	NA	NA	NA	NA	NA		NA	NA	
1. B. 2. b. Natural Gas							9.86	173.71	
Exploration	NA	NA	NA	NA	NA		NA	NA	
i. Production / Processing	Gas produced	PJ	1,385.03	NA	1,077.59		NE	1.49	
ii. Transmission	Gas transmitted	PJ	756.00	622.49	10,733.58		0.47	8.11	
Distribution	Utility sales	PJ	418.67	22,422.22	391,953.91		9.39	164.10	
iii. Other Leakage	NE	NE	NE	NE	NE		NE	NE	
NA	NA	NA	NA	NA	NA		NA	NA	
1. B. 2. c. Venting							3,666.63	110.15	
i. Oil	NA	NA	NA	NA	NA		NA	NA	
ii. Gas	PJ gas produced	PJ	1,385.03	2,647,321.63	79,530.97		3,666.63	110.15	
iii. Combined	NA	NA	NA	NA	NA		NA	NA	
Flaring							2,846.61	35.31	0.08
i. Oil	IE	IE	IE	NA	NA	NA	IE	IE	IE
ii. Gas	IE	IE	IE	NA	NA	NA	IE	IE	IE
iii. Combined	PJ gas and oil produced	PJ	2,817.13	1,010,464.83	12,533.31	28.93	2,846.61	35.31	0.08
1.B.2.d. Other (please specify)							NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA


Additional information

Description	Value	Unit
Pipelines length (km)	93,934.50	km
Number of oil wells	NA	NA
Number of gas wells	NA	NA
Gas throughput	31,524.00	million m ³
Oil throughput ^(a)	667,000.00	bbbls/day
Other relevant information (specify)		NA
NA	NA	NA

^(a) barrels per day

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY
International Bunkers and Multilateral Operations
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption (TJ)	CO ₂ (t/TJ)	CH ₄ (kg/TJ)	N ₂ O (kg/TJ)	CO ₂ (Gg)	CH ₄ (Gg)	N ₂ O (Gg)
Marine Bunkers	34,200.00				2,473.96	0.12	0.07
Gasoline	NA	NA	NA	NA	NA	NA	NA
Gas/Diesel Oil	4,660.00	69.00	7.00	2.00	321.55	0.03	0.01
Residual Fuel Oil	29,540.00	72.86	3.00	2.00	2,152.40	0.09	0.06
Lubricants	NA	NA	NA	NA	NA	NA	NA
Coal	NA	NA	NA	NA	NA	NA	NA
Other (please specify) 	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA
Aviation Bunkers	118,130.00				8,151.32	0.03	0.24
Jet Kerosene	118,130.00	69.00	0.24	2.07	8,151.32	0.03	0.24
Gasoline	NA	NA	NA	NA	NA	NA	NA
Multilateral Operations	NE	NE	NE	NE	NE	NE	NE

Additional information




Fuel consumption	Allocation (percent)	
	Domestic	International
Marine	38.58	61.42
Aviation	40.23	59.77

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for informational purposes only.

Documentation box: Please explain how the consumption of International Marine and Aviation Bunkers fuels was estimated and separated from the domestic consumption.
Petroleum companies provide international and domestic bunker fuel consumption for maritime and aviation activities. Data on international and domestic fuel consumption are collected separately due to differential excise taxes placed on the fuel.

TABLE 2(l) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 1 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	HFCs ⁽¹⁾		PFCs ⁽¹⁾		SF ₆		NO _x	CO	NM VOC	SO ₂
				P	A	P	A	P	A				
	(Gg)			CO ₂ equivalent (Gg)				(Gg)					
Total Industrial Processes	18,211.90	2.76	0.07	NE	2,344.90	NE	1,527.04	NE	0.00	55.70	8.04	62.33	1,729.33
A. Mineral Products	5,099.94	NA	NA							NE	NE	16.73	NE
1. Cement Production	3,328.36												NE
2. Lime Production	1,015.22												
3. Limestone and Dolomite Use	756.35												
4. Soda Ash Production and Use ⁽²⁾	C												
5. Asphalt Roofing	NO										NO	NO	
6. Road Paving with Asphalt	NE									NE	NE	16.73	NE
7. Other (please specify) 	NE	NA	NA							NA	NA	NA	NA
Glass production	NE	NA	NA							NA	NA	NA	NA
Magnesia Production	NE	NA	NA							NA	NA	NA	NA
B. Chemical Industry⁽²⁾	C	NE	C	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
1. Ammonia Production	C		NE							NE	NE	NE	NE
2. Nitric Acid Production			C							NE			
3. Adipic Acid Production			NO							NO	NO	NO	
4. Carbide Production	NO	NO									NO	NO	NO
5. Other (please specify) 	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polymers and other chemicals	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C. Metal Production	13,111.96	2.76	0.07	NA	NA	NA	1,527.04	NA	NE	55.70	8.04	0.10	1,729.33
1. Iron and Steel Production	10,467.76	2.76	0.07							55.70	8.04	0.10	0.08
2. Ferroalloys Production	NA	NA								NA	NA	NA	NA
3. Aluminium Production	2,644.20	NA					1,527.04			NE	NE	NE	45.67
4. SF ₆ Used in Aluminium and Magnesium Foundries								NE					
5. Other (please specify) 	NE	NE	NE	NA	NA	NA	NA	NA	NA	NE	NE	NE	1,683.59
Copper, lead, zinc, nickel and silver	NE	NE	NE	NA	NA	NA	NA	NA	NA	NE	NE	NE	1,683.59

⁽¹⁾ P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This only applies in sectors where methods exist for both tiers.

⁽²⁾ Speciated emissions from Soda Ash Production and Use, Ammonia Production and Nitric Acid Production are Confidential. These emissions are reported in Summary Table 2 and Table 10s5 as CO₂-e emissions. The total emissions from 2A4 Soda Ash Production and Use and 2B. Chemical Industry are 2754.06 Gg CO₂-e

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

Australia
2001
Submission 2003




GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	HFCs		PFCs		SF ₆		NO _x	CO	NMVOC	SO ₂
				P	A	P	A	P	A				
	(Gg)			CO ₂ equivalent (Gg)				(Gg)					
D. Other Production	NE									NE	NE	45.50	NE
1. Pulp and Paper										NE	NE	NE	NE
2. Food and Drink	NE											45.50	
E. Production of Halocarbons and SF₆					NO		NO		NO				
1. By-product Emissions					NO		NO		NO				
Production of HCFC-22					NO								
Other					NA		NA		NA				
2. Fugitive Emissions					NO		NO		NO				
3. Other (please specify) 					NA		NA		NA				
NA					NA		NA		NA				
F. Consumption of Halocarbons and SF₆				NE	2,344.90	NE	NE	NE	NE				
1. Refrigeration and Air Conditioning Equipment				NE	2,344.90	NE	NE	NO	NO				
2. Foam Blowing				NE	NE	NO	NO	NO	NO				
3. Fire Extinguishers				NE	NE	NE	NE	NO	NO				
4. Aerosols/ Metered Dose Inhalers				NE	NE	NO	NO	NO	NO				
5. Solvents				NE	NE	NO	NO	NO	NO				
6. Semiconductor Manufacture				NO	NO	NO	NO	NO	NO				
7. Electrical Equipment				NO	NO	NO	NO	NE	NE				
8. Other (please specify) 				NA	NA	NA	NA	NA	NA				
NA				NA	NA	NA	NA	NA	NA				
G. Other (please specify) 	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2(l).A–G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Emissions of CO₂, CH₄ and N₂O
(Sheet 1 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS					
	Production/Consumption quantity		CO ₂	CH ₄	N ₂ O	CO ₂		CH ₄		N ₂ O	
	Description	(kt)	(t/t)	(t/t)	(t/t)	(Gg)	⁽¹⁾	(Gg)	⁽¹⁾	(Gg)	⁽¹⁾
A. Mineral Products						5,099.94	NA	NA	NA	NA	NA
1. Cement Production	Clinker production	6,425.41	0.52			3,328.36	NA				
2. Lime Production	Commercial and in-house	1,489.22	0.68			1,015.22	NA				
3. Limestone and Dolomite Use	Used in iron and steel	1,835.02	0.41			756.35	NA				
4. Soda Ash						C	NA				
	Soda ash production	C	C			C	NA				
	Soda ash use	C	C			C	NA				
5. Asphalt Roofing	NO	NO	NO			NO	NO				
6. Road Paving with Asphalt	Bitumen used in spray sealing	309.74	NE			NE	NE				
7. Other <i>(please specify)</i>						NE	NE	NA	NA	NA	NA
Glass Production	NE	NE	NE			NE	NE				
Magnesia Production	NE	NA	NE	NA	NA	NE	NE	NA	NA	NA	NA
B. Chemical Industry						C	NA	NE	NA	C	NA
1. Ammonia Production	Production	C	C	NA	NE	C	NE			NE	NE
2. Nitric Acid Production	Production	C			C					C	NA
3. Adipic Acid Production	NO	NO			NO					NO	NO
4. Carbide Production	NO	NO	NO	NO		NO	NO	NO	NO		
Silicon Carbide	NO	NO	NO	NO		NO	NO	NO	NO		
Calcium Carbide	NE	NE	NE	NE		NE	NE	NE	NE		
5. Other <i>(please specify)</i>						NE	NE	NE	NE	NE	NE
Carbon Black	NE	NE		NE				NE	NE		
Ethylene	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Dichloroethylene	NE	NE		NE				NE	NE		
Styrene	NE	NE		NE				NE	NE		
Methanol	NE	NE		NE				NE	NE		
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

⁽¹⁾ Adjusted emissions, reduced to account for emission recovery, oxidation, destruction and transformation.

TABLE 2(l).A–G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Emissions of CO₂, CH₄ and N₂O
(Sheet 2 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS					
	Production/Consumption quantity		CO ₂	CH ₄	N ₂ O	CO ₂		CH ₄		N ₂ O	
	Description	(kt)	(t/t)	(t/t)	(t/t)	(Gg)	⁽¹⁾	(Gg)	⁽¹⁾	(Gg)	⁽¹⁾
C. Metal Production						13,111.96	NA	2.76	NA	0.07	NA
1. Iron and Steel Production	Crude steel (BF/BOS)	6,027.00	NA			10,467.76	NA	2.76	NA	0.07	
Steel	Crude steel (BF/BOS)	6,027.00	NA			NA	NA				
Pig Iron	Natural gas (PJ)	21.5	51.15	0.00		1,099.83	NA	0.02	NA	0.002	
Sinter	NA	NA	NA	NA		NA	NA	NA	NA		
Coke	Coke (PJ)	79.99	117.11	0.03		9,367.93	NA	2.74	NA	0.06	
Other (please specify)						NA	NA	NA	NA		
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
2. Ferroalloys Production	NA	NA	NA	NA		NA	NA	NA	NA		
3. Aluminium Production	Primary aluminium	1,788.00	1.48	NA		2,644.20	NA	NA	NA		
4. SF ₆ Used in Aluminium and Magnesium Foundries							NA				
5. Other (please specify)						NE	NA	NE	NA	NE	NA
Copper, lead, zinc, nickel and silver	NE	NE	NE	NE	NE	NE	NA	NE	NA	NE	NA
D. Other Production						NE	NE				
1. Pulp and Paper											
2. Food and Drink	Bread, wine, beer, sugar, meat	NE	NE			NE	NE				
G. Other (please specify)						NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

⁽¹⁾ Adjusted emissions, reduced to account for emission recovery, oxidation, destruction and transformation.

Documentation box:
Data on iron and steel sourced from industry; data on aluminium production sourced from ABARE (2002); data to derive average emission factors for PFCs for aluminium provided by the Australian Aluminium Council
Emissions from aluminium are net of alumina sink
To protect commercial-in-confidence data speciated emissions from Soda Ash Production and Use, Ammonia Production, and Nitric Acid Production are Confidential. These emissions are reported in Summary Table 2 and Table 10s5 as CO ₂ -e emissions. The total emissions from these sources are 2754.06 Gg CO ₂ -e.
BF/BOS refers to blast furnace/basic oxygen system

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES—EMISSIONS OF HFCs, PFCs AND SF₆
(Sheet 1 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ea	Total HFCs ⁽¹⁾	CF ₄	C ₂ F ₆	C ₃ F ₈	C ₄ F ₁₀	c-C ₃ F ₈	C ₃ F ₁₂	C ₆ F ₁₄	Total PFCs ⁽¹⁾	SF ₆
	(t) ⁽²⁾																						
Total Actual Emissions of Halocarbons (by chemical) and SF ₆	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		198.45	25.77	NE	NE	NE	NE	NE		NE
C. Metal Production															198.45	25.77	NE	NE	NE	NE	NE		NE
Aluminium Production															198.45	25.77	NE	NE	NE	NE	NE		
SF ₆ Used in Aluminium Foundries																							NO
SF ₆ Used in Magnesium Foundries																							NE
E. Production of Halocarbons and SF₆	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
1. By-product Emissions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
Production of HCFC-22	NO																						
Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
2. Fugitive Emissions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
3. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA
F(a). Consumption of Halocarbons and SF₆ (actual emissions - Tier 2)	NE	NE	NE	NE	76.68	NE	1,393.14	NE	NE	83.97	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
1. Refrigeration and Air Conditioning Equipment	NE	NE	NE	NO	76.68	NE	1,393.14	NE	NE	83.97	NO	NE	NE		NE	NE	NE	NE	NE	NE	NE		NO
2. Foam Blowing	NE	NO	NE	NO	NO	NE	NE	NE	NE	NE	NO	NO	NE		NO	NO	NO	NO	NO	NO	NO		NO
3. Fire Extinguishers	NE	NO	NE	NO	NE	NE	NE	NE	NE	NO	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NO
4. Aerosols/Metered Dose Inhalers	NO	NO	NO	NO	NO	NO	NE	NE	NO	NO	NE	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
5. Solvents	NE	NO	NE	NE	NO	NE	NE	NE	NO	NO	NO	NO	NE		NO	NO	NO	NO	NO	NO	NO		NO
6. Semiconductor Manufacture	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
7. Electrical Equipment																							NE
8. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA
G. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA		NA

⁽¹⁾ Although shaded, the columns with HFCs and PFCs totals on sheet 1 are kept for consistency with sheet 2 of the table.

⁽²⁾ Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. [t] instead of [Gg].

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES—EMISSIONS OF HFCs, PFCs AND SF₆
(Sheet 2 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Total HFCs	CF ₄	C ₂ F ₆	C ₃ F ₈	C ₄ F ₁₀	C ₄ -C ₈ F ₈	C ₃ F ₁₂	C ₆ F ₁₄	Total PFCs	SF ₆
	(t)																						
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF ₆	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO		NO
Import:	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
In bulk	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
In products	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
Export:	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
In bulk	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
In products	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
Destroyed amount	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE	NE	NE	NE	NE	NE	NE		NE
GWP values used	11700	650	150	1300	2800	1000	1300	140	300	3800	2900	6300	560		6500	9200	7000	7000	8700	7500	7400		23900
Total Actual Emissions (Gg CO ₂ eq.)	NE	NE	NE	NE	214.72	NE	1,811.09	NE	NE	319.09	NE	NE	NE	2,344.90	1,289.93	237.11	NE	NE	NE	NE	NE		1,527.04
C. Metal Production															1,289.93	237.11	NO	NO	NO	NO	NO		1,527.04
E. Production of Halocarbons and SF ₆	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO
F(a). Consumption of Halocarbons and SF ₆	NE	NE	NE	NE	214.72	NE	1,811.09	NE	NE	319.09	NE	NE	NE	2,344.90	NE	NE	NE	NE	NE	NE	NE		NE
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA
Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF ₆																							
Actual Emissions – F(a) (Gg CO ₂ eq.)	NE	NE	NE	NE	214.72	NE	1,811.09	NE	NE	319.09	NE	NE	NE	2,344.90	NE	NE	NE	NE	NE	NE	NE		NE
Potential Emissions – F(p) (7) (Gg CO ₂ eq.)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		NE
Potential/Actual Emissions Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00

TABLE 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Metal Production; Production of Halocarbons and SF₆
(Sheet 1 of 1)

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS	EMISSIONS	
	Description	(t)	(kg/t)	(t)	(1)
C. PFCs and SF₆ from Metal Production					
PFCs from Aluminium Production					
CF ₄	Primary aluminium	1,788,000.00	0.11	198.45	NA
C ₂ F ₆	Primary aluminium	1,788,000.00	0.01	25.77	NA
SF ₆				0.00	NA
Aluminium Foundries	(SF ₆ consumption)	NO	NO	NO	NO
Magnesium Foundries	(SF ₆ consumption)	NE	NE	NE	NA
E. Production of Halocarbons and SF₆					
1. By-product Emissions					
Production of HCFC-22					
HFC-23	NO	NO	NO	NO	NO
Other (specify chemical) <input type="text"/>					
NA	NA	NA	NA	NA	NA
2. Fugitive Emissions					
HFCs (specify chemical) <input type="text"/>					
NO	NO	NO	NO	NO	NO
PFCs (specify chemical) <input type="text"/>					
NO	NO	NO	NO	NO	NO
SF ₆	NO	NO	NO	NO	NO
3. Other (please specify) <input type="text"/>					
NA	NA	NA	NA	NA	NA

⁽¹⁾ Adjusted emissions, reduced to account for emission recovery, oxidation, destruction and transformation

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF₆
(Sheet 1 of 2)

Australia
2001
Submission 2003









GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA <i>Amount of fluid</i>			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
1 Refrigeration									
Air Conditioning Equipment									
Domestic Refrigeration (<i>Specify chemical</i>) 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Commercial Refrigeration 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transport Refrigeration 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Industrial Refrigeration 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Stationary Air-Conditioning 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mobile Air-Conditioning 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2 Foam Blowing									
Hard Foam 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soft Foam 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Consumption of Halocarbons and SF₆

(Sheet 2 of 2)

Australia

2001

Submission 2003








GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA <i>Amount of fluid</i>			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
3 Fire Extinguishers 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
4 Aerosols									
Metered Dose Inhalers 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Other 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
5 Solvents 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
6 Semiconductors 									
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7 Electric Equipment 									
NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
8 Other (please specify) 									
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	N ₂ O	NM VOC
	(Gg)		
Total Solvent and Other Product Use	NA	NE	140.31
A. Paint Application	NA	NA	62.18
B. Degreasing and Dry Cleaning	NA	NA	35.27
C. Chemical Products, Manufacture and Processing			0.78
D. Other (<i>please specify</i>)	NA	NE	42.09
Domestic and Commercial Aerosol Products	NA	NE	25.33
Other Domestic and Commercial Products	NA	NE	7.79
Consumer Cleaning Products	NA	NE	8.96

TABLE 3.A–D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS	
	Description	(kt)	CO ₂ (t/t)	N ₂ O (t/t)
A. Paint Application	Production	260.76	0.00	0.00
B. Degreasing and Dry Cleaning	Population	NA	0.00	0.00
C. Chemical Products, Manufacture and Processing				
D. Other (please specify)				
Domestic and Commercial Aerosol Products	Population	NA	0.00	0.00
Other Domestic and Commercial Products	Population	NA	0.00	0.00
Consumer Cleaning Products	Population	NA	0.00	0.00

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

Australia
2001
Submission 2003


GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH ₄	N ₂ O	NO _x	CO	NMVOC
	(Gg)				
Total Agriculture	3,707.88	90.00	1,393.05	18,590.11	1,084.42
A. Enteric Fermentation	3,104.98				
1. Cattle	2,303.51				
Dairy Cattle	359.53				
Non-Dairy Cattle	1,943.97				
2. Buffalo	0.37				
3. Sheep	789.03				
4. Goats	1.78				
5. Camels and Llamas	0.10				
6. Horses	3.92				
7. Mules and Asses	0.00				
8. Swine	3.79				
9. Poultry	NE				
10. Other (please specify) 	2.48				
Alpaca	0.04				
Deer	1.51				
Ostriches/Emus	0.93				
B. Manure Management	91.10	3.68			NA
1. Cattle	29.13				
Dairy Cattle	28.20				
Non-Dairy Cattle	0.93				
2. Buffalo	NE				
3. Sheep	NE				
4. Goats	NE				
5. Camels and Llamas	NE				
6. Horses	NE				
7. Mules and Asses	NE				
8. Swine	59.75				
9. Poultry	2.22				

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Australia
2001
Submission 2003






GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH ₄	N ₂ O	NO _x	CO	NM VOC
	(Gg)				
B. Manure Management (continued)					
10. Anaerobic Lagoons		0.07			NA
11. Liquid Systems		0.00			NA
12. Solid Storage and Dry Lot		1.91			NA
13. Other (please specify) 		1.70			NA
Digester		0.00			NA
Poultry with bedding		1.64			NA
Poultry without bedding		0.06			NA
C. Rice Cultivation	35.14				NA
1. Irrigated	35.14				NA
2. Rainfed	NO				NA
3. Deep Water	NO				NA
4. Other (please specify) 	NA				NA
NA	NA				NA
D. Agricultural Soils	NE	62.21			NA
1. Direct Soil Emissions	NE	24.95			NA
2. Animal Production	NE	14.54			NA
3. Indirect Emissions	NE	NE			NA
4. Other (please specify) 	NA	22.73			NA
Soil Disturbance	NA	22.73			NA
E. Prescribed Burning of Savannas	464.05	23.75	1,372.27	18,098.02	1,055.72
F. Field Burning of Agricultural Residues	12.62	0.36	20.78	492.10	28.71
1. Cereals	11.40	0.28	16.28	444.53	25.93
2. Pulse	NO	NO	NO	NO	NA
3. Tuber and Root	NO	NO	NO	NO	NA
4. Sugar Cane	1.22	0.08	4.51	47.56	2.77
5. Other (please specify) 	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
G. Other (please specify) 	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE
Enteric Fermentation
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS
	Population size (1000 head)	Average daily feed intake (MJ/day)	CH ₄ conversion (%)	CH ₄ (kg CH ₄ /head/yr)
1. Cattle	NA	NA	NA	NA
Dairy Cattle	3,177	226.0	7.59	113.16
Non-Dairy Cattle	24,476	132.7	9.06	79.42
2. Buffalo	7	NA	NA	55.00
3. Sheep	114,740	16.9	6.16	6.88
4. Goats	356	NA	NA	5.00
5. Camels and Llamas	2	NA	NA	46.00
6. Horses	218	NA	NA	18.00
7. Mules and Asses	0	NA	NA	10.00
8. Swine	2,629	30.8	0.71	1.44
9. Poultry	89,918	NA	NA	NA
10. Other <i>(please specify)</i> <input type="text"/>				
Alpaca	4	NA	NA	10.00
Deer	141	NA	NA	10.70
Ostriches/Emus	185	NA	NA	5.00

Additional information (for Tier 2)

Disaggregated list of animals	Dairy Cattle	Non-Dairy Cattle - Free range	Non-Dairy Cattle - Feedlot	Sheep	Swine
Indicators:					
Weight	(kg) 470.90	382.32	463.60	45.44	60.60
Feeding situation ^(c)	Pasture	Pasture	Stall-fed	Pasture	Stall-fed
Milk yield	(kg/day) 13.39	NA	NA	NA	NA
Work	(hrs/day) NA	NA	NA	NA	NA
Pregnant	(%) NA	NA	NA	NA	NA
Digestibility of feed	(%) 76.28	59.68	80.00	63.02	NA

Documentation box:

Feed intakes are presented only for those species where it is calculated. For the minor species, a Tier 1 approach was used and no intake calculated.

The intake, liveweight and digestibility values are national means. For example, average intake was calculated as the sum of all intakes by class by season by region divided by the sum of animal numbers. Similarly weight was calculated as the total herd weight divided by the total number of animals. Full disaggregation of data by species by State by season can be found in the Australian Methodology Workbook for Livestock 6.2. This includes data used for the Inventory calculations that are not requested in this table.

Methane conversion was calculated as daily methane emissions (drawn from Table4s1) converted to energy terms (55.22 MJ/kg) divided by the daily feed intake (which assumes an energy value in feed of 18.4 MJ/kg).

Milk yield is calculated as a national average from industry statistics.

Feedlot cattle data are presented in the additional table as a separate class but these animals are included in the Non-Dairy Cattle class in the main table.

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH₄ Emissions from Manure Management
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS CH ₄ (kg CH ₄ /head/yr)
	Population size (1000 head)	Allocation by climate region ⁽¹⁾			Typical animal mass (kg)	VS ⁽²⁾ daily excretion (kg dm/head/dy)	CH ₄ producing potential (Bo) ⁽²⁾ (CH ₄ m ³ /kg VS)	
		Cool	Temperate	Warm				
1. Cattle	NA	NA	NA	NA	NA	NA	NA	NA
Dairy Cattle	3,177	0.0	90.7	9.3	470.9	2.7	0.2	8.8
Non-Dairy Cattle - Feedlot	653	0.0	46.5	53.5	483.9	1.9	0.2	1.4
2. Buffalo	7	0.0	0.0	100.0	NA	NA	NA	NA
3. Sheep	114,740	0.0	92.2	7.8	45.4	NA	NA	NA
4. Goats	356	0.0	78.3	21.7	NA	NA	NA	NA
5. Camels and Llamas	2	0.0	20.2	79.8	NA	NA	NA	NA
6. Horses	218	0.0	57.8	42.2	NA	NA	NA	NA
7. Mules and Asses	0	0.0	0.0	100.0	NA	NA	NA	NA
8. Swine	2,629	0.0	78.2	21.8	60.6	0.3	0.5	22.7
9. Poultry	89,918	0.0	84.7	15.3	1.1	0.0	0.3	0.0

⁽¹⁾ Climate regions are defined in terms of annual average temperature as follows: Cool=less than 15°C; Temperate=15°C to 25°C inclusive; and Warm=greater than 25°C (see Table 4.2 of the IPCC Guidelines (Volume 3, Reference Manual, p. 4.8)).

⁽²⁾ VS=Volatile Solids; Bo=maximum methane producing capacity for manure IPCC Guidelines (Volume 3, Reference Manual, p.4.23 and p. 4.15.

Documentation Box:

Animal mass is calculated as a national average for those species where it is recorded in the Australian inventory approach. For Dairy Cattle, this includes milking cattle as well as other classes in the dairy herd (eg heifers, dairy bulls). These other classes are a small portion of the herd but importantly have very different feeding conditions to Non-Dairy Cattle and hence are here dealt with separately as part of the dairy herd. Animal mass for Non-Dairy Cattle is the weighted average for Feedlot Cattle as free range cattle are not considered to produce methane from manure as explained below.

Volatile solids for Dairy and Feedlot Cattle are calculated from average feed intake (Table4.A) adjusted for digestibility and ash content.

Volatile solids and values for waste management systems for Non-Dairy Cattle refer only to cattle kept in feedlots and are calculated similarly to that for Dairy Cattle. The predominantly free-ranging cattle, sheep and other livestock in Australia are not considered to produce significant methane from manure as it is voided under generally, hot, dry, aerobic conditions with substantial bioturbation.

Additional information (for Tier 2)

Animal category ^(a)	Indicator	Climate region	Animal waste management system					
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range paddock	Other
Dairy Cattle	Allocation ^(a)	Cool	NA	NA	NA	NA	NA	NA
		Temperate	4.9	0.4	1.3	0.0	93.3	0.0
		Warm	2.5	0.0	5.8	0.0	91.7	0.0
	MCF ^(a)	Cool	NA	NA	NA	NA	NA	NA
		Temperate	90.0	35.0	0.5	1.5	1.0	NA
		Warm	90.0	65.0	1.0	5.0	2.0	NA
Non-Dairy Cattle	Allocation ^(a)	Cool	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	100.0	NA	NA
		Warm	NA	NA	NA	100.0	NA	NA
	MCF ^(a)	Cool	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	1.5	NA	NA
		Warm	NA	NA	NA	5.0	NA	NA
Swine	Allocation ^(a)	Cool	NA	NA	NA	NA	NA	NA
		Temperate	70.7	0.0	24.7	4.1	0.0	0.5
		Warm	92.0	1.5	1.5	5.0	0.0	0.0
	MCF ^(a)	Cool	NA	NA	NA	NA	NA	NA
		Temperate	90.0	35.0	0.5	1.5	NA	10.0
		Warm	90.0	65.0	1.0	5.0	NA	10.0

^(a) MCF = Methane Conversion Factor (IPCC Guidelines, (Volume 3, Reference Manual, p. 4.9)). In the case of use of other climate region categorization, please replace the entries in the cells with the climate regions for which the MCFs are specified.

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE
N₂O Emissions from Manure Management
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS	
	Population size	Nitrogen excretion	Nitrogen excretion per animal waste management system (kg N/yr)						Emission factor per animal waste management system	
	(1000s)	(kg N/head/yr)	Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other	(kg N ₂ O-N/kg N)	
Non-Dairy Cattle - Free Range	23,823	39.1	NA	NA	NA	NA	931,815,810.9	NA	Anaerobic lagoon	0.001
Dairy Cattle	3,177	139.1	21,029,165.0	1,617,834.5	7,330,847.6	NA	411,943,415.2	NA	Liquid system	0.001
Sheep	114,740	7.0	NA	NA	NA	NA	806,128,085.0	NA	Solid storage and dry lot	0.020
Swine	2,629	12.1	23,935,529.9	102,845.2	6,251,862.3	1,368,645.4	NA	134,158.5	Other	0.018
Poultry	89,918	NA	NA	NA	NA	NA	1,848,844.0	59,779,288.8		
Other (please specify) <input type="checkbox"/>										
Non-Dairy Cattle-Feedlot	653	91.0	NA	NA	NA	59,380,379.7	NA	NA		
Goats, horses, deer, buffalo, donkeys, mules, emus, ostriches, alpacas, camels	914	NA	NA	NA	NA	NA	14,651,308.1	NA		
Total per AWMS⁽¹⁾			44,964,694.9	1,720,679.8	13,582,709.9	60,749,025.2	2,166,387,463.1	59,913,447.3		

⁽¹⁾ AWMS = Animal Waste Management System.

Documentation box:
Non-Dairy cattle are here disaggregated into free-range and feedlot cattle. This is important as both the characteristics of nitrogen excretion differ as does the handling of the waste in terms of the Inventory process. Nitrous oxide emissions from managed manure systems arises only from feedlot cattle.
Nitrogen excretion rates for the aggregated livestock classes are reported in the Australian Methodology Workbook for Livestock 6.2

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE
Rice Cultivation
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
		Harvested area (10 ⁻⁹ m ² /yr)	Organic amendments added :		CH ₄ (g/m ²)	CH ₄ (Gg)
			type	(t/ha)		
1. Irrigated						35.14
Continuously Flooded		1.56	NA	NA	22.50	35.14
Intermittently Flooded	Single Aeration	NO	NO	NO	NO	NO
	Multiple Aeration	NO	NO	NO	NO	NO
2. Rainfed						NO
Flood Prone		NO	NO	NO	NO	NO
Drought Prone		NO	NO	NO	NO	NO
3. Deep Water						NO
Water Depth 50-100 cm		NO	NO	NO	NO	NO
Water Depth > 100 cm		NO	NO	NO	NO	NO
4. Other (please specify)						NA
NA		NA	NA	NA	NO	NA
Upland Rice		NO				
Total		1.56				

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE
Agricultural Soils
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS		EMISSIONS (Gg N ₂ O)
	Description	Value	Unit		
Direct Soil Emissions	N input to soils (kg N/yr)				24.95
Synthetic Fertilizers	Use of synthetic fertilizers (kg N/yr)	1,013,010,333	(kg N ₂ O-N/kg N)	0.013	19.90
Animal Wastes Applied to Soils	Nitrogen input from manure applied to soils (kg N/yr)	178,585,094	(kg N ₂ O-N/kg N)	0.018	5.05
N-fixing Crops	Dry pulses and soybeans produced (kg dry biomass/yr)	IE	(kg N ₂ O-N/kg dry biomass)	NA	IE
Crop Residue	Dry production of other crops (kg dry biomass/yr)	IE	(kg N ₂ O-N/kg dry biomass)	NA	IE
Cultivation of Histosols	Area of cultivated organic soils (ha)	IE	(kg N ₂ O-N/ha)	NA	IE
Animal Production	N excretion on pasture range and paddock (kg N/yr)	2,166,387,463	(kg N₂O-N/kg N)	0.004	14.54
Indirect Emissions					NE
Atmospheric Deposition	Volatized N (NH ₃ and NO _x) from fertilizers and animal wastes (kg N/yr)	IE	(kg N ₂ O-N/kg N)	NA	IE
Nitrogen Leaching and Run-off	N from fertilizers and animal wastes that is lost through leaching and run off (kg N/yr)	NE	(kg N ₂ O-N/kg N)	NA	NE
Other (please specify)					22.73
Soil Disturbance	Area of improved pasture and crops (ha)	49,869,203	(kg N ₂ O-N/ha)	0.290	22.73

Additional information

Fraction ^(a)	Description	Value
Frac _{BURN}	Fraction of crop residue burned	NA
Frac _{FUEL}	Fraction of livestock N excretion in excrements burned for fuel	NA
Frac _{GASF}	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH ₃ and NO _x	NA
Frac _{GASM}	Fraction of livestock N excretion that volatilizes as NH ₃ and NO _x	NA
Frac _{GRAZ}	Fraction of livestock N excreted and deposited onto soil during grazing	NA
Frac _{LEACH}	Fraction of N input to soils that is lost through leaching and runoff	NA
Frac _{NCRBF}	Fraction of N in non-N-fixing crop	NA
Frac _{NCRO}	Fraction of N in N-fixing crop	NA
Frac _R	Fraction of crop residue removed from the field as crop	NA

^(a) Use the fractions as specified in the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.92 - 4.113).


Documentation box:

Emissions from soil disturbance are the difference between N₂O emissions from pasture and cropping systems and the emissions from the natural ecosystem they replaced. The category accounts for N₂O emissions associated with atmospheric nitrogen deposition, soil cultivation, nitrogen fixation by legume crops, and nitrogen input from crop residues. It does not include indirect emissions from nitrogen leaching. Methodology is detailed in the Australian methodology workbook 5.1.

The quantity of nitrogen input from manure applied to soils differs from nitrogen excretion reported in Table 4.B(b) as it has been adjusted to account for nitrogen emitted as N₂O from the manure management systems.

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE
Prescribed Burning of Savannas
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned (k ha/yr)	Average aboveground biomass density (t dm/ha)	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass	(kg/t dm)		(Gg)	
						CH ₄	N ₂ O	CH ₄	N ₂ O
(specify ecological zone) 								464.05	23.75
NSW	105.25	6.90	1.00	522.87	0.01	2.15	0.11	1.12	0.06
Tas	9.20	9.00	1.00	59.61	0.01	2.15	0.11	0.13	0.01
WA	18,446.49	7.70	1.00	102,267.34	0.01	2.15	0.11	219.53	11.24
SA	102.26	3.00	1.00	220.89	0.01	2.15	0.11	0.47	0.02
Vic	16.03	11.70	1.00	135.07	0.01	2.15	0.11	0.29	0.01
Qld	5,842.03	3.00	1.00	12,618.78	0.01	2.15	0.11	27.09	1.39
NT	24,029.83	5.80	1.00	100,348.59	0.01	2.15	0.11	215.41	11.03
ACT	0.00	11.10	1.00	0.00	0.01	0.00	0.00	0.00	0.00

Additional information

	Living	Dead
Fraction of aboveground biomass	NA	NA
Fraction oxidized	NA	0.72
Carbon fraction	NA	0.46

Documentation box:

The values reported as "Area of Savanna" are 10-year averages of actual areas of savanna burned. These are calculated using a combination of statistics collected by State fire authorities and fire areas of fire scars measured from satellite imagery. Fuel loads reported are fine fuels susceptible to burning.

Fraction oxidized is the product of the proportion of the fire scar which is actually burned, the proportion of fuel exposed to burning which is actually burned, and the proportion of burned fuel which is actually volatilised.






TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE
Field Burning of Agricultural Residues
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		EMISSIONS	
	Crop production	Residue/ Crop ratio	Dry matter fraction	Fraction burned in fields	Biomass burned (Gg dm)	Nitrogen fraction in biomass of residues	CH ₄	N ₂ O	CH ₄	N ₂ O
	(t)						(kg/t dm)	(kg/t dm)	(Gg)	(Gg)
1. Cereals									11.40	0.28
Wheat	23,432,747.46	1.50	0.90	0.12	3,492.42	0.0032	1.87	0.04	6.52	0.13
Barley	5,887,739.37	1.50	0.80	0.12	780.01	0.0032	1.87	0.04	1.46	0.03
Maize	375,489.57	1.50	0.80	0.30	129.77	0.0075	1.96	0.09	0.25	0.01
Oats	1,083,794.18	1.50	0.80	0.12	143.58	0.0032	1.87	0.04	0.27	0.01
Rye	NE	1.50	0.80	0.12	NE	0.0032	NE	NE	NE	NE
Rice	5,887,739.37	1.31	0.80	0.82	1,117.86	0.0065	1.96	0.08	2.19	0.09
Other (please specify) <input type="checkbox"/>									0.71	0.01
Millet	41,865.09	1.50	0.80	0.12	5.55	0.00	1.87	0.04	0.01	0.00
Sorghum	2,025,525.96	1.50	0.80	0.12	268.34	0.00	1.87	0.04	0.50	0.01
Triticale	802,563.80	1.50	0.80	0.12	106.32	0.00	1.87	0.04	0.20	0.00
2. Pulse									NO	NO
Dry bean	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Peas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Soybeans	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Other (please specify) <input type="checkbox"/>									NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3 Tuber and Root									NO	NO
Potatoes	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Other (please specify) <input type="checkbox"/>									NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4 Sugar Cane	33,578,050.90	0.25	0.20	0.41	653.33	0.01	1.87	0.12	1.22	0.08
5 Other (please specify) <input type="checkbox"/>									NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ emissions	CO ₂ removals	Net CO ₂ emissions/ removals	CH ₄	N ₂ O	NO _x	CO
	(Gg)						
Total Land-Use Change and Forestry	90,665.39	-83,345.87	7,319.53	165.68	1.85	64.58	3,461.28
A. Changes in Forest and Other Woody Biomass Stocks	56,452.86	-79,122.33	-22,669.46				
1. Tropical Forests	IE	IE	NA				
2. Temperate Forests	IE	IE	NA				
3. Boreal Forests	IE	IE	NA				
4. Grasslands/Tundra	IE	IE	NA				
5. Other (please specify) 	56,452.86	-79,122.33	-22,669.46				
Harvested Wood	IE	IE	NA				
Managed Native Forest	NA	-57,328.10	-57,328.10				
Plantations	NA	-21,794.23	-21,794.23				
Commercial Harvest	43,896.36	NA	43,896.36				
Fuelwood Consumed	12,556.50	NA	12,556.50				
B. Forest and Grassland Conversion	34,212.53	0.00	34,212.53	119.00	0.98	29.44	2,084.71
1. Tropical Forests	IE	IE	NA	IE	IE	IE	IE
2. Temperate Forests	IE	IE	NA	IE	IE	IE	IE
3. Boreal Forests	IE	IE	NA	IE	IE	IE	IE
4. Grasslands/Tundra	IE	IE	NA	IE	IE	IE	IE
5. Other (please specify) 	34,212.53	0.00	34,212.53	119.00	0.98	29.44	2,084.71
a) Above Ground	27,427.30	NA	27,427.30	119.00	0.98	29.44	2,084.71
b) Below Ground ⁽¹⁾	6,785.23	NA	6,785.23	NA	NA	NA	NA
C. Abandonment of Managed Lands	NA	NA	NA				
1. Tropical Forests	NA	NA	NA				
2. Temperate Forests	NA	NA	NA				
3. Boreal Forests	NA	NA	NA				
4. Grasslands/Tundra	NA	NA	NA				
5. Other (please specify) 	NA	NA	NA				
NA	NA	NA	NA				
D. CO₂ Emissions and Removals from Soil	NE	-4,223.54	-4,223.54				
Cultivation of Mineral Soils	NE	NE	NE				
Cultivation of Organic Soils	NE	NE	NE				
Liming of Agricultural Soils	NE	NE	NE				
Forest Soils	NE	NE	NE				
Other (please specify) 	NA	-4,223.54	-4,223.54				
Pasture Improvement and Minimum Tillage	NA	-4,223.54	-4,223.54				
E. Other (please specify) 	NA	NA	NA	46.68	0.86	35.15	1,376.57
Prescribed Burning and Wildfire in Forests	NA	NA	NA	46.68	0.86	35.15	1,376.57

⁽¹⁾ The reporting of CO₂ emissions from soils, due to Forest and Grassland Conversion (land use change), in 5B differs from the IPCC Guidelines which reports these emissions under 5D.

TABLE 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Australia
2001
Submission 2003




GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NMVOC	SO ₂
	(Gg)						
Total Waste	16.30	786.10	1.78	NE	NE	3.62	NE
A. Solid Waste Disposal on Land	NE	721.94		NA	NA	3.30	
1. Managed Waste Disposal on Land	NE	721.94		NA	NA	3.30	
2. Unmanaged Waste Disposal Sites	NA	NA		NA	NA	NA	
3. Other (<i>please specify</i>) 	NA	NA		NA	NA	NA	
NA	NA	NA		NA	NA	NA	
B. Wastewater Handling		64.16	1.78	NA	NA	0.33	
1. Industrial Wastewater		35.65	NE	NA	NA	0.15	
2. Domestic and Commercial Wastewater		28.51	1.78	NA	NA	0.18	
3. Other (<i>please specify</i>) 		NA	NA	NA	NA	NA	
NA		NA	NA	NA	NA	NA	
C. Waste Incineration	16.30	NE	NE	NE	NE	NE	NE
D. Other (<i>please specify</i>) 	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE
Solid Waste Disposal
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION				IMPLIED EMISSION FACTOR		EMISSIONS ⁽¹⁾	
	Annual MSW at the SWDS (Gg)	MCF	DOC degraded (Gg)	CH ₄ recovery ⁽²⁾ (Gg)	CH ₄ (t/t MSW)	CO ₂ (t/t MSW)	CH ₄ (Gg)	CO ₂ ⁽³⁾ (Gg)
1 Managed Waste Disposal on Land	12,674.97	1.00	NA	99.15	0.06	NA	721.94	NE
2 Unmanaged Waste Disposal Sites	NA	NA	NA	NA	0.00	0.00	NA	NA
- deep (>5 m)	NA	NA	NA	NA	0.00	0.00	NA	NA
- shallow (<5 m)	NA	NA	NA	NA	0.00	0.00	NA	NA
3 Other (please specify)							NA	NA
NA	NA	NA	NA	NA	0.00	0.00	NA	NA

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE
Waste Incineration
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of incinerated wastes (Gg)	IMPLIED EMISSION FACTOR			EMISSIONS		
		CO ₂ (kg/t waste)	CH ₄ (kg/t waste)	N ₂ O (kg/t waste)	CO ₂ ⁽³⁾ (Gg)	CH ₄ (Gg)	N ₂ O (Gg)
Waste Incineration (please specify)	NA				16.30	NE	NE
(biogenic) ⁽³⁾	NA	NA	NA	NA	NA	NA	NA
(plastics and other non-biogenic waste) ⁽³⁾	NA	NA	NA	NA	NA	NA	NA
Solvents	5.61	2,904.00	NA	NA	16.30	NE	NE
NA	NA	NA	NA	NA	NA	NA	NA

MSW – Municipal Solid Waste, SWDS – Solid Waste Disposal Site, MCF – Methane Correction Factor, DOC – Degradable Organic Carbon (IPCC Guidelines (Volume 3. Reference Manual, section 6.2.4)). MSW includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. MSW should not include inorganic industrial waste such as construction or demolition materials.

⁽¹⁾ Actual emissions (after recovery)

⁽²⁾ CH₄ recovered and flared or utilized

⁽³⁾ Under Waste Disposal, CO₂ emissions should be reported only when the disposed wastes are combusted at the disposal site which might constitute a management practice.

CO₂ emissions from non-biogenic wastes are included in the totals, while the CO₂ emissions from biogenic wastes are not included in the totals.

Documentation box:
All relevant information used in calculation should be provided in the additional information box and in the documentation box.
Parties that use country specific models should note this with a brief rationale in the documentation box and fill the relevant cells only.
The Australian methodology for solid waste is based on the US Regression model—see Workbook 7.1. The MSW value used is a 25-year average for waste. DOC is not calculated separately. Methane potential is assumed to be 79 litres per kilogram (Doom and Barlaz, 1995; US EPA-600/R-95-019).

Australia

2001


Submission 2003

Additional information

Description	Value
Total population (1000s)	19,604.00
Urban population (1000s)	NA
Waste generation rate (kg/capita/day)	2.23
Fraction of MSW disposed to SWDS	1.00
Fraction of DOC in MSW	NA
Fraction of wastes incinerated	NE
Fraction of wastes recycled	NA
CH ₄ oxidation factor	NA
CH ₄ fraction in landfill gas	0.50
Number of SWDS recovering CH ₄	NA
CH ₄ generation rate constant (k)	NA
Time lag considered (yr)	25.00
Composition of landfilled waste (%)	NA
Paper and paperboard	NA
Food and garden waste	NA
Plastics	NA
Glass	NA
Textiles	NA
Other (specify)	NA
Other – inert	NA
Other – organic	NA
NA	NA

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Wastewater Handling
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION ⁽¹⁾				IMPLIED EMISSION FACTOR			EMISSIONS ⁽²⁾		
	Total organic product		CH ₄ recovered and/or flared		CH ₄		N ₂ O (kg/kg DC)	CH ₄		N ₂ O (Gg)
	Wastewater	Sludge	Wastewater	Sludge	Wastewater (kg/kg DC)	Sludge (kg/kg DC)		Wastewater (Gg)	Sludge (Gg)	
Industrial Wastewater	NE	NE	1.73	NE	NE	NE	NE	35.65	NE	NE
Domestic and Commercial Wastewater	NE	NE	24.36	NE	NE	NE	NE	28.51	NE	1.78
Other <i>(please specify)</i> 								NA	NA	NA
NA	NA	NA	NA	NA	NE	NE	NA	NA	NA	NA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
	Population (1000s)	Protein consumption (protein in kg/person/yr)	N fraction (kg N/kg protein)	N ₂ O (kg N ₂ O-N/kg sewage N produced)	N ₂ O (Gg)
N ₂ O from human sewage	19,485	36.28	0.16	0.01	1.78

⁽¹⁾ DC – degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial wastewater and BOD (Biochemical Oxygen Demand) for Domestic/Commercial wastewater/sludge (IPCC Guidelines (Volume 3. Reference Manual, pp. 6.14, 6.18)).

⁽²⁾ Actual emissions (after recovery)

Additional information

	Domestic	Industrial
Total wastewater (m ³):	NE	NE
Treated wastewater (%):	NE	NE

Wastewater streams:	Wastewater output (m ³)	DC (kgCOD/m ³)
Industrial wastewater	NE	NE
Iron and steel	NE	NE
Non-ferrous	NE	NE
Fertilizers	NE	NE
Food and beverage	NE	NE
Paper and pulp	NE	NE
Organic chemicals	NE	NE
Other (specify) <input type="checkbox"/>	NA	NA
NA	NA	NA

DC (kg BOD/1000 person/yr)	
Domestic and Commercial	22,500
Other <input type="checkbox"/>	NA
NA	NA

Handling systems:	Industrial wastewater treated (%)	Ind. sludge treated (%)	Domestic wastewater treated (%)	Domestic sludge treated (%)
Aerobic	NA	NA	NA	NA
Anaerobic	NA	NA	NA	NA
Other (specify) <input type="checkbox"/>	NA	NA	NA	NA
NA	NA	NA	NA	NA

Documentation box:

The Australian methodology for Wastewater is based on IPCC and Australian default values—Workbook 7.1. The estimate for Wastewater includes both wastewater and sludge.
Total population data are disaggregated between the sewered (82%) and unsewered (18%) population.
Emissions of N₂O are estimated using the IPCC Default methodology. Protein consumption per capita is sourced from Australian Institute of Health and Welfare (1998)

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 1 of 3)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ emissions	CO ₂ removals	CH ₄	N ₂ O	HFCs		PFCs		SF ₆		NO _x	CO	NM VOC	SO ₂
					P	A	P	A	P	A				
	(Gg)				CO ₂ equivalent (Gg)				(Gg)					
Total National Emissions and Removals	361,874.10	0.00	5,963.59	110.86	NE	2,344.90	NE	1,527.04	NE	NE	3,088.88	26,338.39	2,475.61	2,488.73
1. Energy	336,326.38		1,301.18	17.16							1,575.55	4,278.96	788.22	759.40
A. Fuel Combustion	328,172.58													
Reference Approach	329,402.62		98.41	17.07							1,573.91	4,268.89	566.10	759.40
Sectoral Approach	198,168.52		9.08	2.03							648.49	65.96	8.24	587.72
1. Energy Industries	42,034.59		2.32	0.74							370.78	281.86	15.35	104.40
2. Manufacturing Industries and Construction	72,260.40		30.03	14.05							458.10	3,123.44	445.45	61.21
3. Transport	15,585.94		56.93	0.23							90.89	789.85	96.20	5.61
4. Other Sectors	1,353.17		0.05	0.02							5.65	7.78	0.85	0.46
5. Other	6,923.76		1,202.76	0.09							1.64	10.07	222.13	NE
B. Fugitive Emissions from Fuels	NE		878.36	NA							NA	NA	NA	NA
1. Solid Fuels	6,923.76		324.40	0.09							1.64	10.07	222.13	NE
2. Oil and Natural Gas														
2. Industrial Processes⁽¹⁾	18,211.90		2.76	0.07	NE	2,344.90	NE	1,527.04	NE	NE	55.70	8.04	62.33	1,729.33
A. Mineral Products	5,099.94		NA	NA							NE	NE	16.73	NE
B. Chemical Industry	C		NE	C	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
C. Metal Production	13,111.96		2.76	0.07				1,527.04		NE	55.70	8.04	0.10	1,729.33
D. Other Production	NE										NE	NE	45.50	NE
E. Production of Halocarbons and SF ₆						NO		NO		NO				
F. Consumption of Halocarbons and SF ₆					NE	2,344.90	NE	NE	NE	NE				
G. Other	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines

(1) Excludes confidential Soda Ash Production and Use, Ammonia Production and Nitric Acid Production emissions representing 2754.06 Gg CO₂-e

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 2 of 3)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CO ₂	CH ₄	N ₂ O	HFCs		PFCs		SF ₆		NO _x	CO	NM VOC	SO ₂
	emissions	removals			P	A	P	A	P	A				
	(Gg)				CO ₂ equivalent (Gg)				(Gg)					
3. Solvent and Other Product Use	NA			NE							NA	NA	140.31	NA
4. Agriculture	NA	NA	3,707.88	90.00							1,393.05	18,590.11	1,084.42	NA
A. Enteric Fermentation			3,104.98											
B. Manure Management			91.10	3.68									NA	
C. Rice Cultivation			35.14										NA	
D. Agricultural Soils	NA	NA	NE	62.21									NA	
E. Prescribed Burning of Savannas			464.05	23.75							1372.27	18098.02	1,055.72	
F. Field Burning of Agricultural Residues			12.62	0.36							20.78	492.10	28.71	
G. Other			NA	NA							NA	NA	NA	NA
5. Land-Use Change and Forestry	7,319.53	0.00	165.68	1.85							64.58	3,461.28	396.70	NA
A. Changes in Forest and Other Woody Biomass Stocks	0.00	-22,669.46												
B. Forest and Grassland Conversion	34212.53	0.00	119.00	0.98							29.44	2,084.71	230.30	
C. Abandonment of Managed Lands	NA	NA												
D. CO ₂ Emissions and Removals from Soil	NE	-4,223.54												
E. Other	NA	NA	46.68	0.86							35.15	1,376.57	166.40	NA
6. Waste	16.30		786.10	1.78							NE	NE	3.62	NE
A. Solid Waste Disposal on Land	NE		721.94									NA	3.30	
B. Wastewater Handling			64.16	1.78							NA	NA	0.33	
C. Waste Incineration	16.30		NE	NE							NE	NE	NE	NE
D. Other	NA		NA	NA							NA	NA	NA	NA
7. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 3 of 3)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CO ₂	CH ₄	N ₂ O	HFCs		PFCs		SF ₆		NO _x	CO	NMVOC	SO ₂
	emissions	removals			P	A	P	A	P	A				
	(Gg)				CO ₂ equivalent (Gg)				(Gg)					
Memo Items: ⁽¹⁾														
International Bunkers	10,625.28		0.15	0.31							110.05	15.46	8.78	49.86
Aviation	8,151.32		0.03	0.24							43.61	13.40	6.70	1.54
Marine	2,473.96		0.12	0.07							66.44	2.06	2.08	48.33
Multilateral Operations	NE		NE	NE							NE	NE	NE	NE
CO₂ Emissions from Biomass	18,254.75													

⁽¹⁾ Memo Items are not included in the national totals.

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ emissions	CO ₂ removals	CH ₄	N ₂ O	HFCs		PFCs		SF ₆		NO _x	CO	NM VOC	SO ₂
					P	A	P	A	P	A				
	(Gg)				CO ₂ equivalent (Gg)				(Gg)					
Total National Emissions and Removals	361,874.10	0.00	5,963.59	110.86	NE	NE	NE	1,527.04	NE	NE	3,088.88	26,338.39	2,475.61	2,488.73
1. Energy	336,326.38		1,301.18	17.16							1,575.55	4,278.96	788.22	759.40
A. Fuel Combustion	Reference Approach	328,172.58												
	Sectoral Approach	329,402.62		98.41	17.07						1,573.91	4,268.89	566.10	759.40
B. Fugitive Emissions from Fuels		6,923.76		1,202.76	0.09						1.64	10.07	222.13	NE
2. Industrial Processes¹	18,211.90		2.76	0.07	NE	2,344.90	NE	1,527.04	NE	NE	55.70	8.04	62.33	1,729.33
3. Solvent and Other Product Use	NA			NE							NA	NA	140.31	NA
4. Agriculture	NA	NA	3,707.88	90.00							1,393.05	18,590.11	1,084.42	NA
5. Land-Use Change and Forestry	7,319.53	0.00	165.68	1.85							64.58	3,461.28	396.70	NA
6. Waste	16.30		786.10	1.78							NE	NE	3.62	NE
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Memo Items:														
International Bunkers	10,625.28		0.15	0.31							110.05	15.46	8.78	49.86
Aviation			0.03	0.24							43.61	13.40	6.70	1.54
Marine			0.12	0.07							66.44	2.06	2.08	48.33
Multilateral Operations	NE		NE	NE							NE	NE	NE	NE
CO₂ Emissions from Biomass	18,254.75													


P = Potential emissions based on Tier 1 approach of the IPCC Guidelines

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines

(1) Excludes confidential Soda Ash Production and Use, Ammonia Production and Nitric Acid Production emissions representing 2754.06 Gg CO₂-e

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK		CO ₂	CH ₄	N ₂ O	HFCs	PFCS	SF ₆	Total
CATEGORIES		CO ₂ equivalent (Gg)						
Total (Net Emissions)		361,874.10	125,235.39	34,365.40	2,344.90	1,527.04	NE	528,100.88
1. Energy		336,326.38	27,324.71	5,320.71				368,971.79
A. Fuel Combustion (Sectoral Approach)		329,402.62	2,066.69	5,291.77				336,761.08
1. Energy Industries		198,168.52	190.67	628.64				198,987.82
2. Manufacturing Industries and Construction		42,034.59	48.74	230.24				42,313.57
3. Transport		72,260.40	630.57	4,355.72				77,246.68
4. Other Sectors		15,585.94	1,195.62	70.96				16,852.52
5. Other		1,353.17	1.10	6.21				1,360.48
B. Fugitive Emissions from Fuels		6,923.76	25,258.01	28.94				32,210.71
1. Solid Fuels		NE	18,445.52	NE				18,445.52
2. Oil and Natural Gas		6,923.76	6,812.50	28.94				13,765.20
2. Industrial Processes		18,211.90	57.91	20.44	2,344.90	1,527.04	NE	24,916.24
A. Mineral Products		5,099.94	NE	NA	NA			5,099.94
B. Chemical Industry ¹		NE	NE	NA	NA	NA	NA	2,754.06
C. Metal Production		13,111.96	57.91	20.44	NA	1,527.04	NE	14,717.35
D. Other Production		NE						NE
E. Production of Halocarbons and SF ₆						NO	NO	NO
F. Consumption of Halocarbons and SF ₆						2,344.90	NE	2,344.90
G. Other		NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use		NA	NE	NE				NE
4. Agriculture		NA	77,865.55	27,900.92				105,766.47
A. Enteric Fermentation			65,204.54					65,204.54
B. Manure Management			1,913.05	1,140.66				3,053.71
C. Rice Cultivation			737.90					737.90
D. Agricultural Soils		NA	NE	19,285.67				19,285.67
E. Prescribed Burning of Savannas			9,745.09	7,363.08				17,108.16
F. Field Burning of Agricultural Residues			264.97	111.51				376.49
G. Other			NA	NA				NA
5. Land-Use Change and Forestry		7,319.53	3,479.19	572.32				11,371.03
6. Waste		16.30	16,508.03	551.01				17,075.34
A. Solid Waste Disposal on Land		NE	15,160.68					15,160.68
B. Wastewater Handling			1,347.35	551.01				1,898.35
C. Waste Incineration		16.30	NE	NE				16.30
D. Other		NA	NA	NA				NA
7. Other (please specify)			NA	NA	NA	NA	NA	NA
Memo Items:								
International Bankers		10,625.28	3.14	96.99				10,725.41
Aviation		8,151.32	0.59	75.78				8,227.70
Marine		2,473.96	2.55	21.20				2,497.71
Multilateral Operations		NE	NE	NE				NE
CO₂ Emissions from Biomass		18,254.75						18,254.75

1. Speciated emissions from Soda Ash Production and Use, Ammonia Production and Nitric Acid Production are Confidential. These emissions are reported in Summary Table 2 Table 10s5 as CO₂-e emissions. The total confidential emissions from 2A, Mineral Products and 2B, Chemical Industry shown at 2B are 2754.06 Gg CO₂-e.

GREENHOUSE GAS SOURCE AND SINK		CO ₂	CH ₄	N ₂ O	Total
CATEGORIES		emissions	removals	emissions / removals	emissions
Land-Use Change and Forestry		CO ₂ equivalent (Gg)			
A. Changes in Forest and Other Woody Biomass Stocks		56,452.86	-79,122.33	-22,669.46	-22,669.46
B. Forest and Grassland Conversion		34,212.53	0.00	34,212.53	37,016.30
C. Abandonment of Managed Lands		NA	NA	NA	NA
D. CO ₂ Emissions and Removals from Soil		NE	-4,223.54	-4,223.54	-4,223.54
E. Other		NA	NA	NA	267.50
Total CO ₂ Equivalent Emissions from Land-Use Change and Forestry		90,665.39	-83,345.87	7,319.53	11,371.03
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry ^(a)		Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry ^(a)			
		528,100.88			

^(a) The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 1 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂		CH ₄		N ₂ O		HFCs		PFCs		SF ₆	
	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾
1. Energy	T1,T2	CS	T1,T2	CS	T1,T2	D,CS						
A. Fuel Combustion	RA, T2	CS	T2	CS	T2	CS						
1. Energy Industries	T2	CS	T2	CS	T2	CS						
2. Manufacturing Industries and Construction	T2	CS	T2	CS	T2	CS						
3. Transport	T1, T2	CS	T1, T2	CS	T1, T2	D, CS						
4. Other Sectors	T1, T2	CS	T1, T2	CS	T1, T2	CS						
5. Other	T1, T2	CS	T1	CS	T1	CS						
B. Fugitive Emissions from Fuels	T2	CS	T2	CS	T2	CS						
1. Solid Fuels	NE	NA	T2	CS	NE	NE						
2. Oil and Natural Gas	T2	CS	T2	CS	T2	CS						
2. Industrial Processes	T2	CS	T2	CS	T1	D	T1,T2	D,CS	T1c	CS	T2	CS
A. Mineral Products	T2	CS	NE	NA	NE	NA						
B. Chemical Industry	T1	CS,D	NE	NA	T1	D	NE	NA	NA	NA	NA	NA
C. Metal Production	T2	CS	T2	CS	NE	NA			T1c	CS	T2	CS
D. Other Production	NE	NA										
E. Production of Halocarbons and SF ₆							T1	D	NA	NA	NA	NA
F. Consumption of Halocarbons and SF ₆							T2	CS	NE	NA	NE	NA
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

⁽¹⁾ Use the following notation keys to specify the method applied: D (IPCC default), RA (Reference Approach), T1 (IPCC Tier 1), T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), T2 (IPCC Tier 2), T3 (IPCC Tier 3), C (CORINAIR), CS (Country Specific), M (Model). If using more than one method, enumerate the relevant methods. Explanations of any modifications to the default IPCC methods, as well as information on the proper use of methods per source category where more than one method is indicated, and explanations on the country specific methods, should be provided in the documentation box of the relevant Sectoral background data table.

⁽²⁾ Use the following notation keys to specify the emission factor used: D (IPCC default), C (CORINAIR), CS (Country Specific), PS (Plant Specific), M (Model). Where a mix of emission factors has been used, use different notations in one and the same cells with further explanation in the documentation box of the relevant Sectoral background data table.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 2 of 2)

Australia
2001
Submission 2003


GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂		CH ₄		N ₂ O		HFCs		PFCs		SF ₆	
	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾	Method applied ⁽¹⁾	Emission factor ⁽²⁾
3. Solvent and Other Product Use	NE	NE			NE	NE						
4. Agriculture	NE	NE	CS	CS,D	CS	CS,D						
A. Enteric Fermentation			CS	CS								
B. Manure Management			CS	CS, D	CS	D						
C. Rice Cultivation			T2	CS, D								
D. Agricultural Soils	NA	NA	NA	NA	CS	CS						
E. Prescribed Burning of Savannas			CS	CS	CS	CS						
F. Field Burning of Agricultural Residues			CS	CS	CS	CS						
G. Other	NA	NA	NA	NA	NA	NA						
5. Land-Use Change and Forestry	CS	CS	CS	CS	CS	CS						
A. Changes in Forest and Other Woody Biomass Stocks	CS	CS										
B. Forest and Grassland Conversion	CS,M	CS,M	CS	CS	CS	CS						
C. Abandonment of Managed Lands	CS	CS										
D. CO ₂ Emissions and Removals from Soil	CS	CS										
E. Other	CS	CS	CS	CS	CS	CS						
6. Waste	T2	CS	T2	M,D	T1	D						
A. Solid Waste Disposal on Land	NA	NA	T2	M								
B. Wastewater Handling			T2	D	T1	D						
C. Waste Incineration	T2	CS	NE	NA	NE	NA						
D. Other	NA	NA	NA	NA	NA	NA						
7. Other (please specify) 	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)
(Sheet 1 of 3)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂		CH ₄		N ₂ O		HFCs		PFCs		SF ₆		NO _x		CO		NMVOC		SO ₂	
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality
Total National Emissions and Removals																				
1 Energy	PART	H-L	PART	M-L	PART	M-L							PART	M-L	PART	M-L	PART	M-L	ALL	H
A. Fuel Combustion Activities																				
Reference Approach	ALL	H																		
Sectoral Approach	ALL	H	PART	L	PART	L							PART	L	PART	L	PART	L	ALL	H
1. Energy Industries	ALL	H	ALL	L	ALL	L							ALL	L	ALL	L	ALL	L	ALL	H
2. Manufacturing Industries and Construction	ALL	H	ALL	L	ALL	L							ALL	L	ALL	L	ALL	L	ALL	H
3. Transport	ALL	H	ALL	M	ALL	M							ALL	M	ALL	M	ALL	M	ALL	H
4. Other Sectors	ALL	H	ALL	L	ALL	L							ALL	L	ALL	L	ALL	L	ALL	H
5. Other	ALL	H	PART	L	PART	L							PART	L	PART	L	PART	L	PART	L
B. Fugitive Emissions from Fuels	PART	L	PART	M	PART	L							ALL	L	ALL	L	ALL	L	NA	NA
1. Solid Fuels	NE	NE	PART	M	NE	NE														
2. Oil and Natural Gas	PART	L	PART	M	ALL	L							ALL	L	ALL	L	ALL	L	NA	NA
2 Industrial Processes	PART	M	PART	L	PART	L	NE	NA	ALL	M	PART	H	NE	NA	NE	NA	PART	M	PART	M
A. Mineral Products	ALL	M	NE	NA	NE	NA							NE	NA	NE	NA	PART	M	NE	NA
B. Chemical Industry	PART	M	NE	NA	PART	M	NE	NA	NA	NA			NE	NA	NE	NA	NE	NA	NE	NA
C. Metal Production	PART	H	ALL	L	NE	NA			ALL	M	ALL	H	NE	NA	NE	NA	NE	NA	PART	M
D. Other Production	NE	NA											NE	NA	NE	NA	NE	NA	NE	NA
E. Production of Halocarbons and SF ₆							ALL	M	NA	NA	NA	NA								

Note: To fill in the table use the notation key as given in the IPCC Guidelines (Volume 1. Reporting Instructions, Tables. 37)

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)
(Sheet 2 of 3)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂		CH ₄		N ₂ O		HFCs		PFCs		SF ₆		NO _x		CO		NMVOC		SO ₂	
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality
2 Industrial Processes (continued)																				
F. Consumption of Halocarbons and SF ₆																				
Potential							NE	NA	NA	NA	NE	NA								
Actual							PART	M	NA	NA	NE	NA								
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3 Solvent and Other Product Use	NE	NA			NE	NA							NE	NA	NE	NA	ALL	L	NE	NA
4 Agriculture	NA	NA	ALL	M	ALL	L							ALL	L	ALL	L	ALL	L	NA	NA
A. Enteric Fermentation			ALL	M																
B. Manure Management			ALL	M	ALL	L											NA	NA		
C. Rice Cultivation			ALL	L													NA	NA		
D. Agricultural Soils	NA	NA	NA	NA	ALL	L											NA	NA		
E. Prescribed Burning of Savannas			ALL	L	ALL	L							ALL	L	ALL	L	ALL	L	NA	NA
F. Field Burning of Agricultural Residues			ALL	L	ALL	L							ALL	L	ALL	L	ALL	L	NA	NA
G. Other			NA	NA	NA	NA							NA	NA	NA	NA	NA	NA	NA	NA
5 Land-Use Change and Forestry	ALL	M	ALL	L	ALL	L							ALL	L	ALL	L	NA	NA	NA	NA
A. Changes in Forest and Other Woody Biomass Stocks	ALL	M																		
B. Forest and Grassland Conversion	ALL	M	ALL	L	ALL	L							ALL	L	ALL	L	ALL	L		

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)
(Sheet 3 of 3)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂		CH ₄		N ₂ O		HFCs		PFCs		SF ₆		NO _x		CO		NMVOC		SO ₂	
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality
5 Land-Use Change and Forestry (continued)																				
C. Abandonment of Managed Lands	NE	NA																		
D. CO ₂ Emissions and Removals from Soil	PART	L																		
E. Other	ALL	M	ALL	L	ALL	L							ALL	L	ALL	L	ALL	L	NA	NA
6 Waste	PART	L	ALL	L	PART	L							NE	NA	NE	NA	ALL	L	NE	NA
A. Solid Waste Disposal on Land	NA	NA	ALL	L											NA	NA	ALL	L		
B. Wastewater Handling			ALL	L	PART	L							NA	NA	NA	NA	ALL	L		
C. Waste Incineration	PART	L	NA	NA	NE	NA							NE	NA	NE	NA	NE	NA	NE	NA
D. Other	NA	NA	NA	NA	NA	NA							NA	NA	NA	NA	NA	NA	NA	NA
7 Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Memo Items:																				
International Bunkers	ALL	H	ALL	M	ALL	M							ALL	M	ALL	M	ALL	M	ALL	H
Aviation	ALL	H	ALL	M	ALL	M							ALL	M	ALL	M	ALL	M	ALL	H
Marine	ALL	H	ALL	M	ALL	M							ALL	M	ALL	M	ALL	M	ALL	H
Multilateral Operations	NE	NE	NE	NE	NE	NE							NE	NE	NE	NE	NE	NE	NE	NE
CO₂ Emissions from Biomass	ALL	M																		

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1990

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals		355,991.12	363,230.98	2.03	118,862.87	121,900.36	2.56	23,182.32	23,894.67	3.07
1. Energy		271,182.19	258,622.51	-4.63	25,074.75	25,155.07	0.32	2,469.95	2,465.51	-0.18
1.A.	Fuel Combustion Activities	265,219.48	252,659.80	-4.74	2,308.88	2,389.20	3.48	2,434.29	2,429.84	-0.18
1.A.1.	Energy Industries	141,805.68	141,805.68	0.00	39.88	39.88	0.00	438.33	438.33	0.00
1.A.2.	Manufacturing Industries and Construction	50,029.11	37,384.55	-25.27	34.27	32.46	-5.29	238.22	211.26	-11.32
1.A.3.	Transport	59,217.60	59,726.89	0.86	607.72	551.33	-9.28	1,633.96	1,701.64	4.14
1.A.4.	Other Sectors	12,485.74	12,485.74	0.00	1,625.84	1,764.58	8.53	116.22	74.88	-35.57
1.A.5.	Other	1,681.35	1,256.94	-25.24	1.16	0.95	-18.56	7.55	3.74	-50.50
1.B.	Fugitive Emissions from Fuels	5,962.71	5,962.71	0.00	22,765.87	22,765.87	0.00	35.67	35.67	0.00
1.B.1.	Solid Fuel	NE	NE	0.00	15,816.36	15,816.36	0.00	NE	NE	0.00
1.B.2.	Oil and Natural Gas	5,962.71	5,962.71	0.00	6,949.51	6,949.51	0.00	35.67	35.67	0.00
2. Industrial Processes		6,684.93	19,238.10	187.78	61.73	59.93	-2.92	C	26.78	0.00
2.A.	Mineral Products ⁽¹⁾	4,858.20	4,763.45	-1.95	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾	C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production	1,826.73	14,474.64	692.38	61.73	59.93	-2.92	NE	26.78	0.00
2.D.	Other Production	NE	NE	0.00						
2.G.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use		NA	NA	0.00				NE	NE	0.00
4. Agriculture		NA	NA	0.00	72,131.55	75,158.34	4.20	19,217.75	19,916.03	3.63
4.A.	Enteric Fermentation				64,381.68	67,468.47	4.79			
4.B.	Manure Management				1,568.16	1,508.17	-3.83	300.26	527.43	75.66
4.C.	Rice Cultivation				490.50	490.50	0.00			
4.D.	Agricultural Soils	NA	NA	0.00	NE	NE	0.00	14,669.16	15,140.27	3.21
4.E.	Prescribed Burning of Savannas				5,507.04	5,507.04	0.00	4,160.95	4,160.95	0.00
4.F.	Field Burning of Agricultural Residues				184.17	184.17	0.00	87.38	87.38	0.00
4.G.	Other				NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)		78,123.99	85,370.37	9.28	6,791.51	6,723.70	-1.00	1,012.05	1,003.77	-0.82
5.A.	Changes in Forest and Other Woody Biomass Stocks	-24,598.42	-24,598.42	0.00						
5.B.	Forest and Grassland Conversion	106,945.95	114,192.33	6.78	5,574.78	5,506.96	-1.22	680.01	671.74	-1.22
5.C.	Abandonment of Managed Lands	NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil	-4,223.54	-4,223.54	0.00						
5.E.	Other	NA	NA	0.00	1,216.73	1,216.73	0.00	332.03	332.03	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1990

(Sheet 2 of 2)

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste			NE	NE	0.00	14,803.33	14,803.33	0.00	482.57	482.57	0.00
6.A.	Solid Waste Disposal on Land		NE	NE	0.00	13,623.32	13,623.32	0.00			
6.B.	Wastewater Handling					1,180.01	1,180.01	0.00	482.57	482.57	0.00
6.C.	Waste Incineration		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:											
International Bunkers			6,400.97	6,400.97	0.00	2.63	2.63	0.00	57.81	57.81	0.00
Multilateral Operations			NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass			16,514.85	16,514.85	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			HFCs			PFCs			SF ₆		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions			NE	1,126.27	0.00	4,092.78	3,938.28	-3.77	NE	NE	0.00
2.C.3.	Aluminium Production					4,092.78	3,938.28	-3.77	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆		NO	1,126.27	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF₆			NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO₂ equivalents⁽¹⁾			1170.2	1732.00	48.01						

			Previous submission		Latest submission		Difference
			CO ₂ equivalent (Gg)				(%)
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry			503,299.25		515,822.56		2.49
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry			417,371.70		422,724.72		1.28

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1991

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals		331,474.91	341,284.72	2.96	116,405.53	121,251.08	4.16	23,285.52	24,264.32	4.20
1. Energy		273,221.44	260,716.76	-4.58	24,548.20	24,653.62	0.43	2,694.00	2,745.01	1.89
1.A.	Fuel Combustion Activities	267,476.32	254,971.64	-4.68	2,316.51	2,421.93	4.55	2,660.56	2,711.57	1.92
1.A.1.	Energy Industries	145,296.14	145,296.14	0.00	40.30	40.30	0.00	456.17	456.17	0.00
1.A.2.	Manufacturing Industries and Construction	49,404.94	36,829.60	-25.45	33.70	31.89	-5.35	232.26	205.38	-11.58
1.A.3.	Transport	58,574.54	59,076.56	0.86	571.59	540.59	-5.42	1,845.34	1,969.71	6.74
1.A.4.	Other Sectors	12,558.60	12,558.60	0.00	1,669.88	1,808.30	8.29	118.92	76.32	-35.82
1.A.5.	Other	1,642.11	1,210.75	-26.27	1.05	0.84	-19.36	7.87	3.99	-49.26
1.B.	Fugitive Emissions from Fuels	5,745.12	5,745.12	0.00	22,231.69	22,231.69	0.00	33.44	33.44	0.00
1.B.1.	Solid fuel	NE	NE	0.00	15,979.04	15,979.04	0.00	NE	NE	0.00
1.B.2.	Oil and Natural Gas	5,745.12	5,745.12	0.00	6,252.65	6,252.65	0.00	33.44	33.44	0.00
2. Industrial Processes		6,377.88	18,882.92	196.07	57.46	55.21	-3.92	C	26.64	0.00
2.A.	Mineral Products ⁽¹⁾	4,551.14	4,477.14	-1.63	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾	C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production	1,826.74	14,405.78	688.61	57.46	55.21	-3.92	NE	26.64	0.00
2.D.	Other Production	NE	NE	0.00						
2.G.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use		NA	NA	0.00				NE	NE	0.00
4. Agriculture		NA	NA	0.00	71,014.77	75,381.67	6.15	19,223.89	20,079.24	4.45
4.A.	Enteric Fermentation				63,447.84	67,704.15	6.71			
4.B.	Manure Management				1,565.59	1,508.06	-3.67	409.69	584.27	42.61
4.C.	Rice Cultivation				536.08	523.78	-2.29			
4.D.	Agricultural Soils	NA	NA	0.00	NE	NE	0.00	14,737.55	15,280.50	3.68
4.E.	Prescribed Burning of Savannas				5,283.33	5,467.19	3.48	3,991.92	4,130.84	3.48
4.F.	Field Burning of Agricultural Residues				181.93	178.48	-1.89	84.72	83.63	-1.29
4.G.	Other				NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)		51,875.59	61,685.04	18.91	5,652.13	6,027.62	6.64	878.86	924.67	5.21
5.A.	Changes in Forest and Other Woody Biomass Stocks	-24,084.18	-24,084.18	0.00						
5.B.	Forest and Grassland Conversion	80,183.31	89,992.76	12.23	4,396.96	4,772.45	8.54	536.34	582.14	8.54
5.C.	Abandonment of Managed Lands	NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil	-4,223.54	-4,223.54	0.00						
5.E.	Other	NA	NA	0.00	1,255.17	1,255.17	0.00	342.52	342.52	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

(Sheet 2 of 2)

year:

1991

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		NE	NE	0.00	15,132.96	15,132.96	0.00	488.76	488.76	0.00
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	13,937.81	13,937.81	0.00			
6.B.	Wastewater Handling				1,195.15	1,195.15	0.00	488.76	488.76	0.00
6.C.	Waste Incineration	NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		6,378.80	6,378.80	0.00	2.38	2.38	0.00	57.68	57.68	0.00
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass		16,641.90	16,641.90	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	1,126.27	0.00	4,096.10	3,941.47	-3.77	NE	NE	0.00
2.C.3.	Aluminium Production				4,096.10	3,941.47	-3.77	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	1,126.27	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾		1133.7	1732.00	52.77						
				Previous submission		Latest submission		Difference		
						CO ₂ equivalent (Gg)		(%)		
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry						476,395.76		493,599.87		
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry						417,989.17		424,962.54		

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1992

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			314,756.15	327,936.56	4.19	116,534.40	120,138.89	3.09	23,523.90	24,182.57	2.80
1. Energy			275,843.00	265,401.81	-3.79	25,592.92	25,743.13	0.59	3,070.66	2,992.46	-2.55
1.A.	Fuel Combustion Activities		270,002.05	259,560.87	-3.87	2,324.97	2,475.18	6.46	3,037.41	2,959.21	-2.57
1.A.1.	Energy Industries		148,512.17	148,512.17	0.00	42.25	42.25	0.00	465.67	465.67	0.00
1.A.2.	Manufacturing Industries and Construction		47,228.03	36,707.28	-22.28	32.41	30.90	-4.66	208.00	185.53	-10.80
1.A.3.	Transport		60,023.66	60,194.18	0.28	532.44	546.34	2.61	2,236.54	2,225.53	-0.49
1.A.4.	Other Sectors		12,894.80	12,894.80	0.00	1716.80	1,854.81	8.04	121.98	78.08	-35.99
1.A.5.	Other		1,343.39	1,252.43	-6.77	1.07	0.88	-18.12	5.21	4.40	-15.67
1.B.	Fugitive Emissions from Fuels		5840.95	5,840.95	0.00	23267.95	23,267.95	0.00	33.25	33.25	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	16619.63	16,619.63	0.00	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,840.95	5,840.95	0.00	6648.32	6,648.32	0.00	33.25	33.25	0.00
2. Industrial Processes			6,195.25	16,642.72	168.64	59.54	60.65	1.85	C	22.28	-100.00
2.A.	Mineral Products ⁽¹⁾		4,373.14	4,299.14	-1.69	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	0.00
2.C.	Metal Production		1,822.11	12,343.58	577.43	59.54	60.65	1.85	NE	22.28	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	71,014.77	73,969.76	4.16	19,223.89	19,877.70	3.40
4.A.	Enteric Fermentation					63,447.84	66,430.81	4.70			
4.B.	Manure Management					1,565.59	1,537.61	-1.79	409.69	641.52	56.59
4.C.	Rice Cultivation					536.08	536.08	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	14,737.55	15,159.54	2.86
4.E.	Prescribed Burning of Savannas					5,283.33	5,283.33	0.00	3,991.92	3,991.92	0.00
4.F.	Field Burning of Agricultural Residues					181.93	181.93	0.00	84.72	84.72	0.00
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			32,717.91	45,892.02	40.27	4,557.65	5,055.84	10.93	734.63	795.40	8.27
5.A.	Changes in Forest and Other Woody Biomass Stocks		-24,543.87	-24,543.87	0.00						
5.B.	Forest and Grassland Conversion		61,485.32	74,659.43	21.43	3,373.60	3,871.79	14.77	411.51	472.28	14.77
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,184.05	1,184.05	0.00	323.12	323.12	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1992

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		NE	NE	0.00	15,309.51	15,309.51	0.00	494.73	494.73	0.00
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	14,099.77	14,099.77	0.00			
6.B.	Wastewater Handling				1,209.74	1,209.74	0.00	494.73	494.73	0.00
6.C.	Waste Incineration	NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		6,584.40	6,584.40	0.00	2.35	2.35	0.00	59.67	59.67	0.00
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass		15,141.52	15,141.52	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	1,053.94	0.00	4,089.47	3,935.10	-3.77	NE	NE	0.00
2.C.3.	Aluminium Production				4,089.47	3,935.10	-3.77	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	1,053.94	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾		1181.7	1715.43	45.16						
				Previous submission		Latest submission		Difference		
				CO ₂ equivalent (Gg)				(%)		
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry				460,085.66		478,962.47		4.10		
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry				422,075.48		427,219.21		1.22		

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1993

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			323,463.38	332,760.42	2.87	115,682.83	118,911.69	2.79	24,424.40	25,049.37	2.56
1. Energy			278,986.82	268,804.61	-3.65	24,774.47	24,912.47	0.56	3,373.59	3,269.30	-3.09
1.A.	Fuel Combustion Activities		273,139.47	262,957.26	-3.73	2,364.46	2,502.46	5.84	3,341.68	3,237.38	-3.12
1.A.1.	Energy Industries		149,790.74	149,790.74	0.00	43.32	43.32	0.00	462.62	462.62	0.00
1.A.2.	Manufacturing Industries and Construction		47,423.36	37,143.37	-21.68	34.74	33.27	-4.24	228.57	206.68	-9.58
1.A.3.	Transport		60,757.06	61,358.05	0.99	519.37	559.43	7.71	2,515.95	2,483.96	-1.27
1.A.4.	Other Sectors		13,375.86	13,375.86	0.00	1765.91	1,865.57	5.64	125.56	79.68	-36.54
1.A.5.	Other		1,792.45	1,289.24	-28.07	1.12	0.87	-22.20	8.97	4.45	-50.40
1.B.	Fugitive Emissions from Fuels		5,847.35	5,847.35	0.00	22410.00	22,410.00	0.00	31.92	31.92	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	16611.41	16,611.41	0.00	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,847.35	5,847.35	0.00	5798.60	5,798.60	0.00	31.92	31.92	0.00
2. Industrial Processes			6,492.85	16,771.14	158.30	57.45	63.29	10.16	C	21.76	-100.00
2.A.	Mineral Products ⁽¹⁾		4,570.87	4,507.25	-1.39	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		1,921.97	12,198.89	534.71	57.45	63.29	10.16	NE	21.76	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	65.00	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	70,139.82	72,904.79	3.94	19,757.23	20,425.69	3.38
4.A.	Enteric Fermentation					62,212.30	64,995.27	4.47			
4.B.	Manure Management					1,616.51	1,598.51	-1.11	469.85	720.16	53.27
4.C.	Rice Cultivation					598.63	598.63	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	15,027.95	15,446.11	2.78
4.E.	Prescribed Burning of Savannas					5,517.29	5,517.29	0.00	4,168.69	4,168.69	0.00
4.F.	Field Burning of Agricultural Residues					195.09	195.09	0.00	90.73	90.73	0.00
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			37,983.71	47,184.67	24.22	5,070.17	5,390.22	6.31	793.98	833.02	4.92
5.A.	Changes in Forest and Other Woody Biomass Stocks		-24,154.58	-24,154.58	0.00						
5.B.	Forest and Grassland Conversion		66,361.83	75,562.79	13.86	3,907.08	4,227.12	8.19	476.58	515.62	8.19
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,163.09	1,163.09	0.00	317.40	317.40	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1993

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		NE	NE	0.00	15,640.92	15,640.92	0.00	499.60	499.60	0.00
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	14,419.29	14,419.29	0.00			
6.B.	Wastewater Handling				1,221.64	1,221.64	0.00	499.60	499.60	0.00
6.C.	Waste Incineration	NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		6,987.84	6,987.84	0.00	2.40	2.40	0.00	63.35	63.35	0.00
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass		16,799.68	16,799.68	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	1,446.59	0.00	3,035.44	2,833.07	-6.67	NE	NE	0.00
2.C.3.	Aluminium Production				3,035.44	2,833.07	-6.67	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	1,446.59	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾		1186.1	1726.78	45.59						
				Previous submission		Latest submission		Difference		
						CO ₂ equivalent (Gg)		(%)		
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry						467,792.12		482,727.92		
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry						423,944.26		429,320.01		

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1994

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			331,883.01	340,556.46	2.61	114,301.80	117,508.96	2.81	25,037.30	25,680.78	2.57
1. Energy			284,097.13	272,700.18	-4.01	24,334.15	24,668.53	1.37	3,663.23	3,546.98	-3.17
1.A.	Fuel Combustion Activities		278,524.56	267,127.62	-4.09	2,378.57	2,470.77	3.88	3,634.76	3,518.52	-3.20
1.A.1.	Energy Industries		150,850.78	150,850.78	0.00	43.99	43.99	0.00	468.04	468.04	0.00
1.A.2.	Manufacturing Industries and Construction		50,008.85	38,645.38	-22.72	35.76	34.13	-4.56	233.49	209.36	-10.33
1.A.3.	Transport		62,300.00	62,765.30	0.75	511.58	576.05	12.60	2,797.16	2,757.11	-1.43
1.A.4.	Other Sectors		13,491.90	13,491.90	0.00	1,786.06	1,815.63	1.66	126.68	79.08	-37.57
1.A.5.	Other		1,873.02	1,374.24	-26.63	1.17	0.96	-18.20	9.40	4.92	-47.65
1.B.	Fugitive Emissions from Fuels		5,572.57	5,572.57	0.00	21,955.58	22,197.77	1.10	28.46	28.46	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	16,084.42	16,326.61	1.51	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,572.57	5,572.57	0.00	5,871.16	5,871.16	0.00	28.46	28.46	0.00
2. Industrial Processes			7,334.22	18,615.55	153.82	70.47	69.82	-0.93	C	24.07	-100.00
2.A.	Mineral Products ⁽¹⁾		5,294.76	5,210.39	-1.59	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		2,039.45	13,405.16	557.29	70.47	69.82	-0.93	NE	24.07	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	69,110.51	71,641.98	3.66	20,066.89	20,760.84	3.46
4.A.	Enteric Fermentation					60,960.78	63,485.50	4.14			
4.B.	Manure Management					1,646.05	1,652.81	0.41	519.87	793.08	52.55
4.C.	Rice Cultivation					606.24	606.24	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	15,143.49	15,564.23	2.78
4.E.	Prescribed Burning of Savannas					5,705.22	5,705.22	0.00	4,310.69	4,310.69	0.00
4.F.	Field Burning of Agricultural Residues					192.21	192.21	0.00	92.84	92.84	0.00
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			40,451.67	49,240.72	21.73	5,207.64	5,549.58	6.57	802.28	843.99	5.20
5.A.	Changes in Forest and Other Woody Biomass Stocks		-23,173.16	-23,173.16	0.00						
5.B.	Forest and Grassland Conversion		67,848.37	76,637.42	12.95	4,100.68	4,442.63	8.34	500.20	541.91	8.34
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,106.96	1,106.96	0.00	302.08	302.08	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1994

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste			NE	NE	0.00	15,579.04	15,579.04	0.00	504.91	504.91	0.00
6.A.	Solid Waste Disposal on Land		NE	NE	0.00	14,344.40	14,344.40	0.00			
6.B.	Wastewater Handling					1,234.64	1,234.64	0.00	504.91	504.91	0.00
6.C.	Waste Incineration		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify) <div></div>			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:											
International Bunkers			7,239.92	7,365.97	1.74	2.53	2.64	4.31	65.63	66.70	1.63
Multilateral Operations			NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass			17,618.70	17,618.70	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			HFCs			PFCs			SF ₆				
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference		
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)		
Total Actual Emissions			NE	936.01	0.00	1,986.34	1,847.57	-6.99	NE	NE	0.00		
2.C.3.	Aluminium Production					1,986.34	1,847.57	-6.99	NA	NA	0.00		
2.E.	Production of Halocarbons and SF ₆		NO	811.70	0.00	NO	NO	0.00	NO	NO	0.00		
2.F.	Consumption of Halocarbons and SF ₆		NE	124.31	0.00	NE	NE	0.00	NE	NE	0.00		
	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00		
Potential Emissions from Consumption of HFCs/PFCs and SF ₆			NA	NA	NA	NA	NA	NA	NA	NA	NA		
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾			1297.8	1859.71	43.30								
						Previous submission		Latest submission		Difference			
						CO ₂ equivalent (Gg)						(%)	
						Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry						2.93	
						Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry						1.10	

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1995

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			336,264.66	338,396.03	0.63	115,540.60	118,822.74	2.84	25,438.40	26,102.50	2.61
1. Energy			294,119.56	282,424.83	-3.98	26,282.39	27,097.86	3.10	3,979.26	3,839.76	-3.51
1.A.	Fuel Combustion Activities		288,404.73	276,710.00	-4.05	2,385.47	2,432.71	1.98	3,949.84	3,810.33	-3.53
1.A.1.	Energy Industries		156,807.47	156,807.47	0.00	47.22	47.22	0.00	481.00	481.00	0.00
1.A.2.	Manufacturing Industries and Construction		50,860.23	39,169.22	-22.99	38.65	36.98	-4.34	255.17	230.41	-9.70
1.A.3.	Transport		64,790.01	65,366.69	0.89	507.57	596.85	17.59	3,075.33	3,014.65	-1.97
1.A.4.	Other Sectors		13,961.17	13,961.17	0.00	1,790.60	1,750.56	-2.24	127.10	78.25	-38.43
1.A.5.	Other		1,985.85	1,405.45	-29.23	1.42	1.11	-21.65	11.23	6.02	-46.43
1.B.	Fugitive Emissions from Fuels		5,714.83	5,714.83	0.00	23,896.93	24,665.15	3.21	29.42	29.42	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	16,711.94	17,480.17	4.60	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,714.83	5,714.83	0.00	7,184.98	7,184.98	0.00	29.42	29.42	0.00
2. Industrial Processes			6,964.63	18,596.36	167.01	72.41	71.79	-0.87	C	24.76	-100.00
2.A.	Mineral Products ⁽¹⁾		5,069.60	5,008.05	-1.21	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		1,895.03	13,588.31	617.05	72.41	71.79	-0.87	NE	24.76	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	69,111.43	71,672.28	3.71	20,181.85	20,963.65	3.87
4.A.	Enteric Fermentation					60,390.00	62,927.20	4.20			
4.B.	Manure Management					1,648.69	1,672.34	1.43	510.05	820.25	60.82
4.C.	Rice Cultivation					648.74	648.74	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	14,873.42	15,345.02	3.17
4.E.	Prescribed Burning of Savannas					6,223.56	6,223.56	0.00	4,702.32	4,702.32	0.00
4.F.	Field Burning of Agricultural Residues					200.45	200.45	0.00	96.05	96.05	0.00
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			35,163.64	37,358.01	6.24	4,832.45	4,808.19	-0.50	766.24	763.28	-0.39
5.A.	Changes in Forest and Other Woody Biomass Stocks		-22,380.22	-22,380.22	0.00						
5.B.	Forest and Grassland Conversion		61,767.40	63,961.77	3.55	3,661.03	3,636.77	-0.66	446.57	443.61	-0.66
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,171.42	1,171.42	0.00	319.67	319.67	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

(Sheet 2 of 2)

year:

1995

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		16.83	16.83	0.00	15,241.92	15,172.62	-0.45	511.05	511.05	0.00
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	13,992.28	13,922.98	-0.50			
6.B.	Wastewater Handling				1,249.64	1,249.64	0.00	511.05	511.05	0.00
6.C.	Waste Incineration	16.83	16.83	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
	NA	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		8,532.60	8,532.60	0.00	3.37	3.37	0.00	77.15	77.15	0.00
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass		18,447.90	18,447.90	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	977.42	0.00	1,367.71	1,309.06	-4.29	NE	NE	0.00
2.C.3.	Aluminium Production				1,367.71	1,309.06	-4.29	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	718.85	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	258.57	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾		1291.5	1816.93	40.68						
				Previous submission		Latest submission		Difference		
						CO ₂ equivalent (Gg)		(%)		
						479,902.91		487,424.68		
						439,140.58		444,495.20		
								1.57		
								1.22		

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1996

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			342,962.70	344,309.22	0.39	115,783.58	118,609.02	2.44	25,667.93	26,375.69	2.76
1. Energy			303,456.97	292,173.10	-3.72	26,485.04	26,862.10	1.42	4,226.77	4,099.30	-3.02
1.A.	Fuel Combustion Activities		298,206.44	286,922.57	-3.78	2,372.53	2,394.56	0.93	4,196.04	4,068.57	-3.04
1.A.1.	Energy Industries		163,334.69	163,334.69	0.00	48.18	48.18	0.00	498.83	498.83	0.00
1.A.2.	Manufacturing Industries and Construction		51,869.00	40,314.68	-22.28	38.96	37.30	-4.25	257.46	232.99	-9.50
1.A.3.	Transport		66,829.20	67,710.68	1.32	485.55	618.05	27.29	3,299.68	3,252.37	-1.43
1.A.4.	Other Sectors		14,044.93	14,044.93	0.00	1,798.32	1,689.81	-6.03	127.81	77.61	-39.28
1.A.5.	Other		2,128.63	1,517.59	-28.71	1.53	1.22	-19.79	12.27	6.77	-44.76
1.B.	Fugitive Emissions from Fuels		5,250.53	5,250.53	0.00	24,112.51	24,467.54	1.47	30.72	30.72	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	17,431.48	17,786.50	2.04	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,250.53	5,250.53	0.00	6,681.03	6,681.03	0.00	30.72	30.72	0.00
2. Industrial Processes			7,115.20	18,671.59	162.42	73.47	71.97	-2.03	C	24.63	-100.00
2.A.	Mineral Products ⁽¹⁾		5,151.98	5,076.15	-1.47	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		1,963.22	13,595.44	592.51	73.47	71.97	-2.03	NE	24.63	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	69,163.47	71,769.92	3.77	20,178.01	21,007.74	4.11
4.A.	Enteric Fermentation					60,164.32	62,732.85	4.27			
4.B.	Manure Management					1,653.22	1,691.14	2.29	494.98	840.67	69.84
4.C.	Rice Cultivation					702.28	702.28	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	14,725.64	15,209.67	3.29
4.E.	Prescribed Burning of Savannas					6,426.76	6,426.76	0.00	4,855.86	4,855.86	0.00
4.F.	Field Burning of Agricultural Residues					216.89	216.89	0.00	101.53	101.53	0.00
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			32,377.00	33,451.01	3.32	4,710.93	4,554.09	-3.33	745.34	726.21	-2.57
5.A.	Changes in Forest and Other Woody Biomass Stocks		-22,431.63	-22,431.63	0.00						
5.B.	Forest and Grassland Conversion		59,032.18	60,106.18	1.82	3,579.77	3,422.93	-4.38	436.66	417.53	-4.38
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,131.16	1,131.16	0.00	308.68	308.68	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1996

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste			13.53	13.53	0.00	15,350.68	15,350.94	0.00	517.81	517.81	0.00
6.A.	Solid Waste Disposal on Land		NE	NE	0.00	14,084.51	14,084.77	0.00			
6.B.	Wastewater Handling					1,266.17	1,266.17	0.00	517.81	517.81	0.00
6.C.	Waste Incineration		13.53	13.53	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify) <div></div>			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:											
International Bunkers			9,030.65	9,030.65	0.00	3.35	3.35	0.00	81.69	81.69	0.00
Multilateral Operations			NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass			18,437.02	18,437.02	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			HFCs			PFCs			SF ₆						
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference				
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)				
Total Actual Emissions			NE	602.54	0.00	1,292.09	1,205.39	-6.71	8.60	8.60	0.00				
2.C.3.	Aluminium Production					1,292.09	1,205.39	-6.71	NA	NA	0.00				
2.E.	Production of Halocarbons and SF ₆		NO	NO	0.00	NO	NO	0.00	NO	NO	0.00				
2.F.	Consumption of Halocarbons and SF ₆		NE	602.54	0.00	NE	NE	0.00	NE	NE	0.00				
	Other		NA	NA	0.00	NA	NA	0.00	8.60	8.60	0.00				
Potential Emissions from Consumption of HFCs/PFCs and SF ₆			NA	NA	NA	NA	NA	NA	NA	NA	NA				
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾			1359.2	1970.11	44.95										
						Previous submission		Latest submission		Difference					
						CO ₂ equivalent (Gg)				(%)					
						Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry				487,074.10		493,071.98		1.23	
						Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry				449,240.83		454,340.67		1.14	

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1997

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			352,140.13	348,489.26	-1.04	117,438.92	120,902.33	2.95	27,224.79	27,999.49	2.85
1. Energy			311,061.87	299,491.76	-3.72	26,983.08	27,749.41	2.84	4,477.18	4,346.55	-2.92
1.A.	Fuel Combustion Activities		306,013.18	294,443.08	-3.78	2,831.90	2,427.02	-14.30	4,455.61	4,324.97	-2.93
1.A.1.	Energy Industries		169,403.10	169,403.10	0.00	98.71	98.71	0.00	531.95	531.95	0.00
1.A.2.	Manufacturing Industries and Construction		51,444.82	39,855.61	-22.53	51.74	49.52	-4.30	272.63	248.09	-9.00
1.A.3.	Transport		68,395.02	69,060.28	0.97	484.99	638.20	31.59	3,508.35	3,459.89	-1.38
1.A.4.	Other Sectors		14,585.63	14,585.63	0.00	2,194.87	1,639.36	-25.31	129.92	78.09	-39.89
1.A.5.	Other		2,184.62	1,538.46	-29.58	1.58	1.23	-21.91	12.76	6.95	-45.51
1.B.	Fugitive Emissions from Fuels		5,048.68	5,048.68	0.00	24,151.19	25,322.39	4.85	21.57	21.57	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	17,005.23	18,176.44	6.89	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,048.68	5,048.68	0.00	7,145.96	7,145.96	0.00	21.57	21.57	0.00
2. Industrial Processes			7,143.39	18,661.15	161.24	72.30	70.73	-2.18	C	24.55	-100.00
2.A.	Mineral Products ⁽¹⁾		5,083.05	5,008.60	-1.46	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		2,060.33	13,652.55	562.64	72.30	70.73	-2.18	NE	24.55	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	69,963.20	72,884.27	4.18	21,453.58	22,361.37	4.23
4.A.	Enteric Fermentation					60,407.77	63,270.17	4.74			
4.B.	Manure Management					1,702.80	1,761.42	3.44	492.64	875.52	77.72
4.C.	Rice Cultivation					722.05	722.05	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	15,649.24	16,174.12	3.35
4.E.	Prescribed Burning of Savannas					6,884.31	6,884.31	0.00	5,201.57	5,201.57	0.00
4.F.	Field Burning of Agricultural Residues					246.28	246.32	0.02	110.13	110.17	0.03
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			33,917.94	30,319.41	-10.61	4,837.95	4,613.37	-4.64	770.19	742.80	-3.56
5.A.	Changes in Forest and Other Woody Biomass Stocks		-22,517.35	-22,517.90	0.00						
5.B.	Forest and Grassland Conversion		60,658.83	57,060.86	-5.93	3,644.80	3,420.22	-6.16	444.59	417.20	-6.16
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,193.15	1,193.15	0.00	325.60	325.60	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

(Sheet 2 of 2)

year:

1997

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste			16.94	16.94	0.00	15,582.38	15,584.55	0.01	523.83	524.23	0.08
6.A.	Solid Waste Disposal on Land		NE	NE	0.00	14,301.48	14,302.69	0.01			
6.B.	Wastewater Handling					1,280.90	1,281.86	0.08	523.83	524.23	0.08
6.C.	Waste Incineration		16.94	16.94	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)			NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
	NA		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:											
International Bunkers			9,020.41	9,020.41	0.00	3.29	3.29	0.00	81.71	81.71	0.00
Multilateral Operations			NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass			20,275.50	20,275.50	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			HFCs			PFCs			SF ₆		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions			NE	907.09	0.00	1,122.24	1,050.67	-6.38	5.98	5.98	0.00
2.C.3.	Aluminium Production					1,122.24	1,050.67	-6.38	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆		NO	NO	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆		NE	907.09	0.00	NE	NE	0.00	NE	NE	0.00
	Other		NA	NA	0.00	NA	NA	0.00	5.98	5.98	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆			NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾			1334.6	1958.03	46.72						
						Previous submission		Latest submission		Difference	
						CO ₂ equivalent (Gg)				(%)	
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry						499,266.61		501,306.89		0.41	
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry						459,740.53		408,209.05		-11.21	

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1998

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			369,689.95	372,753.24	0.83	118,595.74	122,570.35	3.35	28,388.27	29,305.50	3.23
1. Energy			327,056.86	315,517.98	-3.53	28,667.64	29,505.84	2.92	4,736.45	4,650.80	-1.81
1.A.	Fuel Combustion Activities		321,767.89	310,229.01	-3.59	2,821.80	2,332.77	-17.33	4,703.24	4,617.59	-1.82
1.A.1.	Energy Industries		184,779.29	184,779.29	0.00	105.73	105.73	0.00	594.69	594.69	0.00
1.A.2.	Manufacturing Industries and Construction		51,376.86	40,222.52	-21.71	53.26	51.12	-4.02	275.75	252.13	-8.57
1.A.3.	Transport		68,425.03	69,122.80	1.02	486.73	655.89	34.75	3,691.38	3,688.58	-0.08
1.A.4.	Other Sectors		14,785.31	14,785.31	0.00	2,174.58	1,518.83	-30.15	128.97	75.87	-41.17
1.A.5.	Other		2,401.40	1,319.08	-45.07	1.50	1.19	-20.64	12.44	6.31	-49.25
1.B.	Fugitive Emissions from Fuels		5,288.97	5,288.97	0.00	25,845.84	27,173.08	5.14	33.21	33.21	0.00
1.B.1.	Solid Fuel		NE	NE	0.00	18,721.53	20,048.78	7.09	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,288.97	5,288.97	0.00	7,124.30	7,124.30	0.00	33.21	33.21	0.00
2. Industrial Processes			7,830.18	18,943.26	141.93	77.21	75.70	-1.95	C	23.63	-100.00
2.A.	Mineral Products ⁽¹⁾		5,477.55	5,433.39	-0.81	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		2,352.63	13,509.87	474.25	77.21	75.70	-1.95	NE	23.63	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	70,034.29	73,116.55	4.40	22,405.72	23,377.94	4.34
4.A.	Enteric Fermentation					60,361.37	63,358.32	4.97			
4.B.	Manure Management					1,760.74	1,846.08	4.85	548.11	974.93	77.87
4.C.	Rice Cultivation					724.47	724.47	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	16,509.10	17,054.53	3.30
4.E.	Prescribed Burning of Savannas					6,929.53	6,929.53	0.00	5,235.73	5,235.73	0.00
4.F.	Field Burning of Agricultural Residues					258.18	258.15	-0.01	112.78	112.76	-0.02
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			34,785.78	38,274.87	10.03	4,408.02	4,458.75	1.15	716.43	722.62	0.86
5.A.	Changes in Forest and Other Woody Biomass Stocks		-22,710.40	-22,709.30	0.00						
5.B.	Forest and Grassland Conversion		61,719.71	65,207.71	5.65	3,223.58	3,274.31	1.57	393.21	399.40	1.57
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,184.44	1,184.44	0.00	323.22	323.22	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1998

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		17.13	17.13	0.00	15,408.59	15,413.51	0.03	529.66	530.50	0.16
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	14,113.45	14,116.30	0.02			
6.B.	Wastewater Handling				1,295.14	1,297.22	0.16	529.66	530.50	0.16
6.C.	Waste Incineration	17.13	17.13	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		9,473.01	9,473.01	0.00	2.98	2.98	0.00	86.32	86.32	0.00
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass		20,492.97	20,492.97	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	1,311.25	0.00	1,466.61	1,396.99	-4.75	3.66	3.66	0.00
2.C.3.	Aluminium Production				1,466.61	1,396.99	-4.75	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	NO	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	1,311.25	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	3.66	3.66	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ equivalents ⁽¹⁾		1501.8	2132.86	42.02						
				Previous submission		Latest submission		Difference		
						CO ₂ equivalent (Gg)		(%)		
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry						519,646.02		529,470.19		
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry						479,735.79		436,372.35		
								-9.04		

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated
(Sheet 1 of 2)

year: 1999

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			CO ₂			CH ₄			N ₂ O		
			Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
			CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals			372,299.17	369,594.83	-0.73	119,189.33	122,204.60	2.53	30,077.11	31,083.00	3.34
1. Energy			331,457.00	324,580.67	-2.07	27,244.62	27,274.46	0.11	4,946.81	4,922.08	-0.50
1.A.	Fuel Combustion Activities		325,723.00	318,846.67	-2.11	2,855.88	2,277.90	-20.24	4,924.54	4,899.34	-0.51
1.A.1.	Energy Industries		187,280.99	189,112.04	0.98	151.45	156.89	3.59	600.90	605.04	0.69
1.A.2.	Manufacturing Industries and Construction		51,787.83	43,600.70	-15.81	53.21	51.12	-3.93	273.26	255.31	-6.57
1.A.3.	Transport		69,501.46	69,969.79	0.67	494.43	663.23	34.14	3,910.48	3,959.26	1.25
1.A.4.	Other Sectors		14,828.44	14,931.69	0.70	2,155.36	1,405.56	-34.79	128.01	74.04	-42.16
1.A.5.	Other		2,324.27	1,232.45	-46.97	1.42	1.10	-22.69	11.89	5.68	-52.24
1.B.	Fugitive Emissions from Fuels		5,734.00	5,734.00	0.00	24,388.74	24,996.56	2.49	22.27	22.74	2.09
1.B.1.	Solid Fuel		NE	NE	0.00	18,362.03	18,969.85	3.31	NE	NE	0.00
1.B.2.	Oil and Natural Gas		5,734.00	5,734.00	0.00	6,026.71	6,026.71	0.00	22.27	22.74	2.09
2. Industrial Processes			7,910.34	19,550.80	147.16	70.91	70.56	-0.50	C	24.77	-100.00
2.A.	Mineral Products ⁽¹⁾		5,413.30	5,355.99	-1.06	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾		C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production		2,497.04	14,194.80	468.47	70.91	70.56	-0.50	NE	24.77	0.00
2.D.	Other Production		NE	NE	0.00						
2.G.	Other		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use			NA	NA	0.00				NE	NE	0.00
4. Agriculture			NA	NA	0.00	71,322.28	74,618.00	4.62	23,858.49	24,901.87	4.37
4.A.	Enteric Fermentation					61,006.13	64,188.14	5.22			
4.B.	Manure Management					1,774.79	1,888.56	6.41	590.48	1,044.41	76.88
4.C.	Rice Cultivation					670.72	670.72	0.00			
4.D.	Agricultural Soils		NA	NA	0.00	NE	NE	0.00	17,404.05	17,993.55	3.39
4.E.	Prescribed Burning of Savannas					7,615.01	7,615.01	0.00	5,753.66	5,753.66	0.00
4.F.	Field Burning of Agricultural Residues					255.64	255.57	-0.03	110.30	110.24	-0.06
4.G.	Other					NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)			32,914.35	25,445.88	-22.69	4,648.77	4,330.25	-6.85	736.30	697.45	-5.28
5.A.	Changes in Forest and Other Woody Biomass Stocks		-23,656.64	-23,298.18	-1.52						
5.B.	Forest and Grassland Conversion		60,794.53	52,967.60	-12.87	3,527.30	3,208.77	-9.03	430.26	391.41	-9.03
5.C.	Abandonment of Managed Lands		NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil		-4,223.54	-4,223.54	0.00						
5.E.	Other		NA	NA	0.00	1,121.48	1,121.48	0.00	306.04	306.04	0.00

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

1999

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		17.49	17.49	0.00	15,902.75	15,911.34	0.05	535.51	536.84	0.25
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	14,593.29	14,598.63	0.04			
6.B.	Wastewater Handling				1,309.45	1,312.70	0.25	535.51	536.84	0.25
6.C.	Waste Incineration	17.49	17.49	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
	NA	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		9,718.28	9,752.78	0.36	3.04	3.11	2.42	88.43	88.74	0.35
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO ₂ Emissions from Biomass		20,145.07	20,145.07	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	1,694.44	0.00	1,005.82	981.99	-2.37	3.59	3.59	0.00
2.C.3.	Aluminium Production				1,005.82	981.99	-2.37	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	NO	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	1,694.44	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	3.59	3.59	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO ₂ -equivalents ⁽¹⁾		1418.1	2019.63	42.42						
				Previous submission		Latest submission		Difference		
				CO ₂ equivalent (Gg)				(%)		
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry				523,993.10		527,578.50		0.68		
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry				485,693.68		497,104.92		2.35		

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(a) RECALCULATION—RECALCULATED DATA

Recalculated

year:

2000

(Sheet 1 of 2)

Australia

2001

Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total National Emissions and Removals		379,852.36	365,526.10	-3.77	121,054.39	124,810.76	3.10	31,905.57	33,145.92	3.89
1. Energy		339,203.28	330,222.67	-2.65	27,429.38	28,581.06	4.20	5,192.36	5,205.58	0.25
1.A.	Fuel Combustion Activities	332,716.03	323,734.22	-2.70	2,406.08	2,207.11	-8.27	5,165.74	5,178.97	0.26
1.A.1.	Energy Industries	191,289.69	192,390.72	0.58	167.30	192.64	15.15	610.69	611.79	0.18
1.A.2.	Manufacturing Industries and Construction	52,128.10	42,588.54	-18.30	54.01	51.61	-4.44	274.08	246.13	-10.20
1.A.3.	Transport	71,692.91	72,095.17	0.56	503.59	663.26	31.71	4,138.21	4,242.46	2.52
1.A.4.	Other Sectors	15,208.21	15,383.96	1.16	1,679.71	1,298.50	-22.70	130.33	72.78	-44.16
1.A.5.	Other	2,397.12	1,275.82	-46.78	1.46	1.10	-24.82	12.44	5.82	-53.23
1.B.	Fugitive Emissions from Fuels	6,487.25	6,488.46	0.02	25,023.30	26,373.96	5.40	26.61	26.61	0.00
1.B.1.	Solid Fuel	NE	NE	0.00	18,411.31	19,638.07	6.66	NE	NE	0.00
1.B.2.	Oil and Natural Gas	6,487.25	6,488.46	0.02	6,612.00	6,735.88	1.87	26.61	26.61	0.00
2. Industrial Processes		7,786.75	18,744.66	140.73	62.16	60.80	-2.19	C	22.88	0.00
2.A.	Mineral Products ⁽¹⁾	5,208.09	5,150.78	-1.10	NA	NA	0.00	NA	NA	0.00
2.B.	Chemical Industry ⁽¹⁾	C	C	0.00	NE	NE	0.00	C	C	-100.00
2.C.	Metal Production	2,578.66	13,593.88	427.17	62.16	60.80	-2.19	NE	22.88	0.00
2.D.	Other Production	NE	NE	0.00						
2.G.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
3. Solvent and Other Product Use		NA	NA	0.00				NE	NE	0.00
4. Agriculture		NA	NA	0.00	72,956.42	76,255.48	4.52	25,483.94	26,769.79	5.05
4.A.	Enteric Fermentation				61,346.19	64,495.65	5.13			
4.B.	Manure Management				1,765.33	1,911.95	8.31	615.36	1,115.65	81.30
4.C.	Rice Cultivation				738.61	741.34	0.37			
4.D.	Agricultural Soils	NA	NA	0.00	NE	NE	0.00	18,076.61	18,860.84	4.34
4.E.	Prescribed Burning of Savannas				8,843.68	8,843.68	0.00	6,682.00	6,682.00	0.00
4.F.	Field Burning of Agricultural Residues				262.61	262.85	0.09	109.97	111.29	1.20
4.G.	Other				NA	NA	0.00	NA	NA	0.00
5. Land-Use Change and Forestry (net)		32,846.03	16,542.46	-49.64	4,470.13	3,763.39	-15.81	687.55	604.02	-12.15
5.A.	Changes in Forest and Other Woody Biomass Stocks	-23,724.96	-23,349.21	-1.58						
5.B.	Forest and Grassland Conversion	60,794.53	44,115.21	-27.44	3,527.30	2,802.83	-20.54	430.26	341.89	-20.54
5.C.	Abandonment of Managed Lands	NA	NA	0.00						
5.D.	CO ₂ Emissions and Removals from Soil	-4,223.54	-4,223.54	0.00						
5.E.	Other	NA	NA	0.00	942.84	960.56	1.88	257.29	262.13	1.88

1. Emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash Production and Use are confidential and are aggregated and reported in Table 8(a)s2 under "Confidential emissions reported as CO₂-equivalents".

TABLE 8(a) RECALCULATION—RECALCULATED DATA
Recalculated year: **2000**
(Sheet 2 of 2)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO ₂			CH ₄			N ₂ O		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
6. Waste		16.30	16.30	0.00	16,136.29	16,150.03	0.09	541.73	543.65	0.35
6.A.	Solid Waste Disposal on Land	NE	NE	0.00	14,811.63	14,820.66	0.06			
6.B.	Wastewater Handling				1,324.67	1,329.37	0.35	541.73	543.65	0.35
6.C.	Waste Incineration	16.30	16.30	0.00	NE	NE	0.00	NE	NE	0.00
6.D.	Other	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
7. Other (please specify)		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
NA		NA	NA	0.00	NA	NA	0.00	NA	NA	0.00
Memo Items:										
International Bunkers		10,197.09	10,099.67	-0.96	3.15	3.36	6.48	92.88	91.69	-1.29
Multilateral Operations		NE	NE	0.00	NE	NE	0.00	NE	NE	0.00
CO₂ Emissions from Biomass			20,146.07	0.00						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		HFCs			PFCs			SF ₆		
		Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference	Previous submission	Latest submission	Difference
		CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)	CO ₂ equivalent (Gg)		(%)
Total Actual Emissions		NE	2,084.83	0.00	973.12	1,103.21	13.37	2.39	2.39	0.00
2.C.3.	Aluminium Production				973.12	1,103.21	13.37	NA	NA	0.00
2.E.	Production of Halocarbons and SF ₆	NO	NO	0.00	NO	NO	0.00	NO	NO	0.00
2.F.	Consumption of Halocarbons and SF ₆	NE	2,084.83	0.00	NE	NE	0.00	NE	NE	0.00
	Other	NA	NA	0.00	NA	NA	0.00	2.39	2.39	0.00
Potential Emissions from Consumption of HFCs/PFCs and SF₆		NA	NA	NA	NA	NA	NA	NA	NA	NA
Confidential emissions reported as CO₂ equivalents⁽¹⁾		1464.6	2076.35	41.77						
					Previous submission		Latest submission		Difference	
					CO₂ equivalent (Gg)				(%)	
Total CO ₂ Equivalent Emissions with Land-Use Change and Forestry					535,252.41		528,747.17		-1.22	
Total CO ₂ Equivalent Emissions without Land-Use Change and Forestry					497,248.70		507,837.30		2.13	

1. Includes confidential emissions of N₂O from Nitric Acid Production and CO₂ from Ammonia Production and Soda Ash production and use

TABLE 8(b) RECALCULATION—EXPLANATORY INFORMATION
(Sheet 1 of 1)

Australia
2001
Submission 2003

Specify the sector and source/sink category where changes in estimates have occurred	GHG	RECALCULATION DUE TO			Additional removal / replacement of source/sink categories
		CHANGES IN:		Activity data	
		Methods	Emission factors		
1.A.1 Stationary Energy Combustion - Energy Industries	CH ₄ , N ₂ O, CO ₂ , NMVOC		Technology weighted Non-CO ₂ emission factors recalculated back to 1999 to incorporate mobile equipment	Revised energy consumption data for 1999 and 2000. Separate consumption data for mobile equipment are no longer available	
1.A.2 Stationary Energy Combustion - Manufacturing Industries and Construction	CO ₂ , CH ₄ , N ₂ O, NMVOC, SO ₂		Technology weighted Non-CO ₂ emission factors recalculated back to 1999 to incorporate mobile equipment	Revised energy consumption data for 1999 and 2000. Separate consumption data for mobile equipment are no longer available	Emissions from refractories used in iron and steel production have been moved to the Industrial Processes sector
1.A.3 Transport - Passenger Cars	CO ₂ , CH ₄ , N ₂ O, CO ₂ , NO _x , NMVOC, SO ₂	A new age class was introduced to accommodate new design rule (ADR 37/01)	New emission factors for the new age class	The factors for allocation activity data to unit categories was incorrectly applied to both international bunkers and domestic fuel. Factors are now applied to domestic fuels only.	
1.A.4 Stationary Energy Combustion - Other Sectors	CO ₂ , CH ₄ , N ₂ O, CO ₂ , NO _x , NMVOC, SO ₂	New methodology used to calculate emission factors for wood heaters for all years	Technology weighted Non-CO ₂ emission factors recalculated back to 1999 to incorporate mobile equipment	Revised energy consumption data for 1999 and 2000. Separate consumption data for mobile equipment are no longer available	
1.A.5 Stationary Energy Combustion - Other	CO ₂	Recycled waste oil now reported in subsector where combusted to avoid double counting			Oil exploitation N ₂ O emissions added from 1999 due to revised APPEA data
1.B Fugitive Emissions From Fuels	CO ₂ , CH ₄ , N ₂ O, CO ₂ , NO _x , NMVOC, SO ₂			Revised Activity Data from APPEA	
1.B.1a Fugitive Emissions From Solid Fuels - Coal mining and handling	CH ₄			Reclassification of a non-gassy mine to gassy.	These emissions are reported as part of the sum of "Confidential data reported as CO ₂ -e"
2.B.2 Nitric Acid Production	N ₂ O		Revised emission factor derived from continuous monitoring.		Refractory use emissions in iron and steel production allocated to Industrial Processes to be consistent with the IPCC Guidelines
2.C.1 Iron and Steel Production	CO ₂ , CH ₄ , N ₂ O, CO ₂ , NO _x , NMVOC, SO ₂		Revised emission factor as a result of continuous improvement in methods by the aluminium industry		
2.C.3 Aluminium Production			Default IPCC emission factor of 4% applied	Activity data obtained from Environment Australia	Emissions included for the first time. Production ceased in 1995
2.E.1 By-product Emissions from production of HFC-22	HFC-23	IPCC default method applied			Actual emissions included in the inventory for the first time. Derived from equipment
2.F.1 Refrigeration and Air Conditioning Equipment	HFCs	Equipment-based method applied			
4.A Enteric Fermentation	CH ₄ and N ₂ O	Revisions have been made to input data (eg live weight, feed quality). In addition for non-dairy cattle and sheep an estimate of the proportion of animals lactating in each season has been incorporated into the calculation of additional methane for milk production	Methane conversion rate for pigs increased from 0.6% to 0.7% based on average of values in the literature.	2000 been recalculated as the average of years 1999, 2000 and 2001. Data in all years were checked and a number transcription errors fixed	
4.B Manure Management		Revisions made to the allocation of waste to different MNMS. The calculation of volatile solids for pigs and poultry was also revised with the pig values now incorporating VS from waste feed entering the MNMS. Other livestock N excretion rates modified following changes to cattle and sheep average excretion rates	IPCC Good Practice N ₂ O emission factors for poultry have been applied	2000 been recalculated as the average of years 1999, 2000 and 2001. Data in all years were checked and a number transcription errors fixed	
4.D Agricultural Soils	N ₂ O	Changes to 4A and 4B result in changes to N excreted and applied to soils. Methodology also now adjusts N applied to soils for the amount of N released as N ₂ O in 4B.			
4.F Field Burning of Agricultural Residues	CH ₄ , N ₂ O, NO _x , CO ₂ , NMVOC			Revised data for sugar cane production and the proportion burnt in New South Wales 1996-2000	
5.A Changes in Forest and Other Woody Biomass	CO ₂			Data on removals for 1999 and 2000 has been corrected.	
5.B Forest and Grassland Conversion	CO ₂ , CH ₄ , N ₂ O, NO ₂ , CO, NMVOC	Minor modifications to the allocation to soil carbon pools and the allocation of biomass to tree components.		Area of change is now based on complete continental coverage and time series analysis. Technical improvements have been made to the land use change assessment methods	
6.A Managed Solid Waste Disposal on Land	CH ₄			Population data updated following publication of the results of a national census	
6.B Wastewater Handling	CH ₄ , N ₂ O			Population data updated following publication of the results of a national census	

Documentation box: Use the documentation box to report the justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory.

Changes to 4.C Rice Cultivation and 5F Prescribed Burning and Wildfires are due to inclusion of 2001 data in the calculation of a average 2000 activity data.

Some differences in the recalculation tables are due to inconsistent rounding or transcription errors in the previous submissions. Only differences due to changes in data and methodology are reported in Table 8(b).

TABLE 9 COMPLETENESS
(Sheet 1 of 2)

Australia
2001
Submission 2003

GHG		Sources and sinks not reported (NE)	
GHG	Sector	Source/sink category	Explanation
CO ₂	1. Energy	1.B.1.a Coal Mining	No data: no suitable emission factors.
	1. Energy	1.B.2.b Natural Gas: (i) Production/Processing	No data: no suitable emission factors.
	1. Energy	1.B.2.b Natural Gas: (iii) Other Leakage	No data are available.
	2. Industrial Processes	2.A.6 Mineral Products: Road Paving with Asphalt	No data are available.
	2. Industrial Processes	2.A.7 Other: Glass Production	No data are available.
	2. Industrial Processes	2.A.7 Other: Magnesia Production	No data were provided by companies producing magnesia in Australia.
	2. Industrial Processes	2.B.4. Chemical Industry: Carbide Production	There is no carbide production in Australia but there is acetylene use produced from imported calcium carbide. No data are available.
	2. Industrial Processes	2.B.5. Chemical Industry: Other	No data are available.
	2. Industrial Processes	2.C.5. Metal Production: Other	No methodology developed. Metals production is predominantly from sulfide ores rather than carbonate ores. No data are available on production from carbonate ores, if any.
	2. Industrial Processes	2.D.1. Other Production: Pulp and Paper	No data are available.
	2. Industrial Processes	2.D.2. Other Production: Food and Drink	No methodology developed.
	5. Land Use Change and Forestry	5.D. Cultivation of mineral and organic soils, Liming of agricultural soils, and Forest soils	No national methodology or data are available. Emissions due to Forest and Grassland Conversion are reported under 2B.
CH ₄	6. Waste	6.A.1. Managed Waste Disposal on Land	No methodology developed.
	Memo Items	Multilateral Operations	No data or methodology available
	1. Energy	1.A.5.a Lubricants	No data or methodology available
	1. Energy	1.B.1.a.i Post-mining activities	No national methodology.
	1. Energy	1.B.2.b Natural Gas: (iii) Other Leakage	Assumed that no post-mining emissions associated with surface mines.
	2. Industrial Processes	2.B.4. Chemical Industry: Carbide Production	No data are available.
	2. Industrial Processes	2.B.5. Chemical Industry: Other	No data are available.
	2. Industrial Processes	2.C.5. Metal Production: Other	No data are available for polymers and other chemicals such as carbon black and fertiliser production.
	4. Agriculture	4.A.9 Emerec Fermentation - Poultry	No methodology developed.
	4. Agriculture	4.B. Manure Management: 4.B.2 - 4.B.7	IPCC Guidelines do not provide default emission factors for poultry.
			Manure of free-ranging animals are not considered to produce significant quantities of CH ₄ under Australian conditions. IPCC defaults are not used as they are likely to produce an overestimate of emissions for these conditions (see Gonzalez-Avalos and Ruiz-Suarez (2001) Bioresource Technology, 80, 63-71.)
	4. Agriculture	4.D. Agricultural Soils: 4.D.1 - 4.D.3	No data or methodology available
N ₂ O	6. Waste	6.C. Waste Incineration: Solvents	No methodology available
	Memo Items	Multilateral Operations	No data or methodology available
	1. Energy	1.A.5.a Lubricants	No national methodology.
	1. Energy	1.B.2.b Natural Gas: (iii) Other Leakage	No data are available.
	2. Industrial Processes	2.B.1. Chemical Industry: Ammonia Production	No methodology available.
	2. Industrial Processes	2.B.5. Chemical Industry: Other	No data are available.
	2. Industrial Processes	2.C.5. Metal Production: Other	No methodology developed.
	3. Solvent and Other Product	3.D. Other	No data are available.
	4. Agriculture	4.D.3 N leaching and runoff	No data are available.
	6. Waste	6.B.1 Wastewater Handling: Industrial Wastewater	No country specific data or emission factors are available.
	6. Waste	6.C. Waste Incineration: Solvents	No data are available.
	Memo Items	Multilateral Operations	No data are available.
HFCs	2. Industrial Processes	2.F. Consumption of Hydrocarbons: 2.F.2 - 2.F.6	No data or methodology available
	2. Industrial Processes	2.F. Consumption of Hydrocarbons: 2.F.1 and 2.F.3	No reliable data are available.
	2. Industrial Processes	2.F.4. SF6 Used in Aluminium and Magnesium Foundries	No longer used as a cover gas in trial magnesium casting plant, however small quantity are used in downstream uses of magnesium. Data is not available on these sources.
SF6	2. Industrial Processes	2.F.7 Electricity equipment	No reliable data are available.
Sources and sinks reported elsewhere (IE)			
GHG		Allocation as per IPCC Guidelines	Allocation used by the Party
GHG	Source/sink category	Allocation as per IPCC Guidelines	Allocation used by the Party
CO ₂	1. Energy	1.B.2.c Flaring (i) Oil and (ii) Gas	1.B.2.c Flaring (iii) Combined Oil and Gas
	5. Land Use Change and Forestry	5.A.1-4: Temperate, tropical and boreal forests; grassland/undura and harvested wood.	5.A.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
CH ₄	1. Energy	1.B.1.b Solid Fuel Transformation	2.C Industrial Processes: Iron and Steel Production
	1. Energy	1.B.2.c Flaring (i) Oil and (ii) Gas	1.B.2.c Flaring (iii) Combined Oil and Gas
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	1. Energy	1.B.2.c Flaring (i) Oil and (ii) Gas	1.B.2.c Flaring (iii) Combined Oil and Gas
	4. Agriculture	4.D.1 Nitrogen fixing crops, crop residues, direct emissions from cultivation of histosols 4.D.3 Atmospheric Deposition	4.D Other: Soil Disturbance
HFCs	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
	5. Land Use Change and Forestry	5.B.1-4: Temperate, tropical and boreal forests and grassland/undura	5.B.5 Other
HFCs	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
SF6	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA
	NA	NA	NA

TABLE 9 COMPLETENESS
(Sheet 2 of 2)

Australia
2001
Submission 2003

Additional GHG Emissions Reported						
GHG	Source Category	Emissions (Gg)	Estimated GWP Value (100-year horizon)	Emissions CO ₂ Equivalent (Gg)	Reference to the Data Source of GWP Value	Explanation
NO _x	Energy	1575.55	NA	NA	NA	Methodology described in Australian methodology workbooks
CO	Energy	4278.96	NA	NA	NA	Methodology described in Australian methodology workbooks
NM VOC	Energy	788.22	NA	NA	NA	Methodology described in Australian methodology workbooks
SO ₂	Energy	759.40	NA	NA	NA	Methodology described in Australian methodology workbooks
NO _x	Industrial Processes	55.70	NA	NA	NA	Methodology described in Australian methodology workbooks
CO	Industrial Processes	8.04	NA	NA	NA	Methodology described in Australian methodology workbooks
NM VOC	Industrial Processes	62.33	NA	NA	NA	Methodology described in Australian methodology workbooks
SO ₂	Industrial Processes	1729.33	NA	NA	NA	Methodology described in Australian methodology workbooks
NM VOC	Solvents	140.31	NA	NA	NA	Methodology described in Australian methodology workbooks
NO _x	Agriculture	1393.05	NA	NA	NA	Methodology described in Australian methodology workbooks
CO	Agriculture	18,590.11	NA	NA	NA	Methodology described in Australian methodology workbooks
NM VOC	Agriculture	1,084.42	NA	NA	NA	Methodology described in Australian methodology workbooks
NO _x	Land Use Change and Forestry	64.58	NA	NA	NA	Methodology described in Australian methodology workbooks
CO	Land Use Change and Forestry	3,461.28	NA	NA	NA	Methodology described in Australian methodology workbooks
NM VOC	Land Use Change and Forestry	396.70	NA	NA	NA	Methodology described in Australian methodology workbooks
NM VOC	Waste	3.62	NA	NA	NA	Methodology described in Australian methodology workbooks

TABLE 10 EMISSIONS TRENDS (CO₂)
(Sheet 1 of 6)

Australia
2001
Submission 2003

	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	(Gg)												
1. Energy	258,622.51	258,622.51	260,716.76	265,401.81	268,804.61	272,700.18	282,424.83	292,173.10	299,491.76	315,517.98	324,580.67	330,222.67	336,326.38
A. Fuel Combustion (Sectoral Approach)	252,659.80	252,659.80	254,971.64	259,560.87	262,957.26	267,127.62	276,710.00	286,922.57	294,443.08	310,229.01	318,846.67	323,734.22	329,402.62
1. Energy Industries	141,805.68	141,805.68	145,296.14	148,512.17	149,790.74	150,850.78	156,807.47	163,334.69	169,403.10	184,779.29	189,112.04	192,390.72	198,168.52
2. Manufacturing Industries and Construction	37,384.55	37,384.55	36,829.60	36,707.28	37,143.37	38,645.38	39,169.22	40,314.68	39,855.61	40,222.52	43,600.70	42,588.54	42,034.59
3. Transport	59,726.89	59,726.89	59,076.56	60,194.18	61,358.05	62,765.30	65,366.69	67,710.68	69,060.28	69,122.80	69,969.79	72,095.17	72,260.40
4. Other Sectors	12,485.74	12,485.74	12,558.60	12,894.80	13,375.86	13,491.90	13,961.17	14,044.93	14,585.63	14,785.31	14,931.69	15,383.96	15,585.94
5. Other	1,256.94	1,256.94	1,210.75	1,252.43	1,289.24	1,374.24	1,405.45	1,517.59	1,538.46	1,319.08	1,232.45	1,275.82	1,353.17
B. Fugitive Emissions from Fuels	5,962.71	5,962.71	5,745.12	5,840.95	5,847.35	5,572.57	5,714.83	5,250.53	5,048.68	5,288.97	5,734.00	6,488.46	6,923.76
1. Solid Fuel	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. Oil and Natural Gas	5,962.71	5,962.71	5,745.12	5,840.95	5,847.35	5,572.57	5,714.83	5,250.53	5,048.68	5,288.97	5,734.00	6,488.46	6,923.76
2. Industrial Processes	19,238.10	19,238.10	18,882.92	16,642.72	16,706.14	18,615.55	18,596.36	18,671.59	18,661.15	18,943.26	19,550.80	18,744.66	18,211.90
A. Mineral Products ⁽¹⁾	4,763.45	4,763.45	4,477.14	4,299.14	4,507.25	5,210.39	5,008.05	5,076.15	5,008.60	5,433.39	5,355.99	5,150.78	5,099.94
B. Chemical Industry ⁽¹⁾	C	C	C	C	C	C	C	C	C	C	C	C	C
C. Metal Production	14,474.64	14,474.64	14,405.78	12,343.58	12,198.89	13,405.16	13,588.31	13,595.44	13,652.55	13,509.87	14,194.80	13,593.88	13,111.96
D. Other Production	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
E. Production of Halocarbons and SF ₆													
F. Consumption of Halocarbons and SF ₆					65.00								
G. Other	NA	NA	NA	NA	65.00	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Agriculture	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A. Enteric Fermentation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Manure Management	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C. Rice Cultivation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. Agricultural Soils	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Prescribed Burning of Savannas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
F. Field Burning of Agricultural Residues	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5. Land-Use Change and Forestry	85,370.37	85,370.37	61,685.04	45,892.02	47,184.67	49,240.72	37,358.01	33,451.01	30,319.41	38,274.87	25,445.88	16,542.46	7,319.53
A. Changes in Forest and Other Woody Biomass Stocks	-24,598.42	-24,598.42	-24,084.18	-24,543.87	-24,154.58	-23,173.16	-22,380.22	-22,431.63	-22,517.90	-22,709.30	-23,298.18	-23,349.21	-22,669.46
B. Forest and Grassland Conversion	114,192.33	114,192.33	89,992.76	74,659.43	75,562.79	76,637.42	63,961.77	60,106.18	57,060.86	65,207.71	52,967.60	44,115.21	34,212.53
C. Abandonment of Managed Lands	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. CO ₂ Emissions and Removals from Soil	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54
E. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6. Waste	NE	NE	NE	NE	NE	NE	16.83	13.53	16.94	17.13	17.49	16.30	16.30
A. Solid Waste Disposal on Land	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
B. Waste-water Handling	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C. Waste Incineration	NE	NE	NE	NE	NE	NE	16.83	13.53	16.94	17.13	17.49	16.30	16.30
D. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Emissions/Removals with LUCF	363,230.98	363,230.98	341,284.72	327,936.56	332,695.42	340,556.46	338,396.03	344,309.22	348,489.26	372,753.24	369,594.83	365,526.10	361,874.10
Total Emissions without LUCF	277,860.61	277,860.61	279,599.68	282,044.54	285,510.75	291,315.73	301,038.02	310,858.22	318,169.85	334,478.37	344,148.95	348,983.64	354,554.58
Memo Items:													
International Bunkers	6,400.97	6,400.97	6,378.80	6,584.40	6,987.84	7,365.97	8,532.60	9,030.65	9,020.41	9,473.01	9,752.78	10,099.67	10,625.28
Aviation	4,345.12	4,345.12	4,520.39	4,795.71	5,199.38	5,353.94	5,857.66	6,311.70	6,501.21	7,232.89	7,268.09	7,330.88	8,151.32
Marine	2,055.85	2,055.85	1,858.42	1,788.69	1,788.46	2,012.03	2,674.93	2,718.95	2,519.20	2,240.12	2,484.69	2,768.79	2,473.96
Multilateral Operations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CO₂ Emissions from Biomass	16,514.85	16,514.85	16,641.90	15,141.52	16,799.68	17,618.70	18,447.90	18,437.02	20,275.50	20,492.97	20,145.07	20,146.07	18,254.75

1. Speciated emissions from Ammonia Production, Nitric Acid Production, and Soda Ash Production and Use are Confidential. These emissions are reported in Table 10s5 as Confidential emissions reported as CQ-e.

TABLE 10 EMISSIONS TRENDS (CH₄)
(Sheet 2 of 6)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	(Gg)												
Total Emissions	5,804.78	5,804.78	5,773.86	5,720.90	5,662.46	5,595.66	5,658.23	5,648.05	5,757.25	5,836.68	5,819.27	5,943.37	5,963.59
1. Energy	1,197.86	1,197.86	1,173.98	1,225.86	1,186.31	1,174.69	1,290.37	1,279.15	1,321.40	1,405.04	1,298.78	1,361.00	1,301.18
A. Fuel Combustion (Sectoral Approach)	113.77	113.77	115.33	117.87	119.16	117.66	115.84	114.03	115.57	111.08	108.47	105.10	98.41
1. Energy Industries	1.90	1.90	1.92	2.01	2.06	2.09	2.25	2.29	4.70	5.03	7.47	9.17	9.08
2. Manufacturing Industries and Construction	1.55	1.55	1.52	1.47	1.58	1.63	1.76	1.78	2.36	2.43	2.43	2.46	2.32
3. Transport	26.25	26.25	25.74	26.02	26.64	27.43	28.42	29.43	30.39	31.23	31.58	31.58	30.03
4. Other Sectors	84.03	84.03	86.11	88.32	88.84	86.46	83.36	80.47	78.06	72.33	66.93	61.83	56.93
5. Other	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.05
B. Fugitive Emissions from Fuels	1,084.09	1,084.09	1,058.65	1,108.00	1,067.14	1,057.04	1,174.53	1,165.12	1,205.83	1,293.96	1,190.31	1,255.90	1,202.76
1. Solid Fuel	753.16	753.16	760.91	791.41	791.02	777.46	832.39	846.98	865.54	954.70	903.33	935.15	878.36
2. Oil and Natural Gas	330.93	330.93	297.75	316.59	276.12	279.58	342.14	318.14	340.28	339.25	286.99	320.76	324.40
2. Industrial Processes	2.85	2.85	2.63	2.89	3.01	3.32	3.42	3.43	3.37	3.36	3.36	2.90	2.76
A. Mineral Products	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Chemical Industry	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
C. Metal Production	2.85	2.85	2.63	2.89	3.01	3.32	3.42	3.43	3.37	3.60	3.36	2.90	2.76
D. Other Production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Production of Halocarbons and SF ₆													
F. Consumption of Halocarbons and SF ₆													
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Agriculture	3,578.97	3,578.97	3,589.60	3,522.37	3,471.66	3,411.52	3,412.97	3,417.62	3,470.68	3,481.74	3,553.24	3,631.21	3,707.88
A. Enteric Fermentation	3,212.78	3,212.78	3,224.01	3,163.37	3,095.01	3,023.12	2,996.53	2,987.28	3,012.87	3,017.06	3,056.58	3,071.22	3,104.98
B. Manure Management	71.82	71.82	71.81	73.22	76.12	78.71	79.64	80.53	83.88	87.91	89.93	91.05	91.10
C. Rice Cultivation	23.36	23.36	24.94	25.53	28.51	28.87	30.89	33.44	34.38	34.50	31.94	35.30	35.14
D. Agricultural Soils	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
E. Prescribed Burning of Savannas	262.24	262.24	260.34	251.59	262.73	271.68	296.36	306.04	327.82	329.98	362.62	421.13	464.05
F. Field Burning of Agricultural Residues	8.77	8.77	8.50	8.66	9.29	9.15	9.55	10.33	11.73	12.29	12.17	12.52	12.62
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5. Land-Use Change and Forestry	320.18	320.18	287.03	240.75	256.68	264.27	228.96	216.86	219.68	212.32	206.20	179.21	165.68
A. Changes in Forest and Other Woody Biomass Stocks	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Forest and Grassland Conversion	262.24	262.24	227.26	184.37	201.29	211.55	173.18	163.00	162.87	155.92	152.80	133.47	119.00
C. Abandonment of Managed Lands	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. CO ₂ Emissions and Removals from Soil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Other	57.94	57.94	59.77	56.38	55.39	52.71	55.78	53.86	56.82	56.40	53.40	45.74	46.68
6. Waste	704.92	704.92	720.62	729.02	744.81	741.86	722.51	731.00	742.12	733.98	757.68	769.05	786.10
A. Solid Waste Disposal on Land	648.73	648.73	663.71	671.42	686.63	683.07	663.00	670.70	681.08	672.20	695.17	705.75	721.94
B. Waste-water Handling	56.19	56.19	56.91	57.61	58.17	58.79	59.51	60.29	61.04	61.77	62.51	63.30	64.16
C. Waste Incineration	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
D. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Memo Items:													
International Bunkers	0.13	0.13	0.11	0.11	0.11	0.13	0.16	0.16	0.16	0.14	0.15	0.16	0.15
Aviation	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03
Marine	0.11	0.11	0.09	0.09	0.09	0.10	0.14	0.14	0.13	0.12	0.12	0.13	0.12
Multilateral Operations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CO₂ Emissions from Biomass													

TABLE 10 EMISSIONS TRENDS (N₂O)
(Sheet 3 of 6)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	(Gg)												
Total Emissions	77.08	77.08	78.27	78.01	80.80	82.84	84.20	85.08	90.32	94.53	100.27	106.92	110.86
1. Energy	7.95	7.95	8.85	9.65	10.55	11.44	12.39	13.22	14.02	15.00	15.88	16.79	17.16
A. Fuel Combustion (Sectoral Approach)	7.84	7.84	8.75	9.55	10.44	11.35	12.29	13.12	13.95	14.90	15.80	16.71	17.07
1. Energy Industries	1.41	1.41	1.47	1.50	1.49	1.51	1.55	1.61	1.72	1.92	1.95	1.97	2.03
2. Manufacturing Industries and Construction	0.68	0.68	0.66	0.60	0.67	0.68	0.74	0.75	0.80	0.81	0.82	0.79	0.74
3. Transport	5.49	5.49	6.35	7.18	8.01	8.89	9.72	10.49	11.16	11.90	12.77	13.69	14.05
4. Other Sectors	0.24	0.24	0.25	0.25	0.26	0.26	0.25	0.25	0.25	0.24	0.24	0.23	0.23
5. Other	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
B. Fugitive Emissions from Fuels	0.12	0.12	0.11	0.11	0.10	0.09	0.09	0.10	0.07	0.11	0.07	0.09	0.09
1. Solid Fuel	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. Oil and Natural Gas	0.12	0.12	0.11	0.11	0.10	0.09	0.09	0.10	0.07	0.11	0.07	0.09	0.09
2. Industrial Processes	0.09	0.09	0.09	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07
A. Mineral Products	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Chemical Industry ⁽¹⁾	C	C	C	C	C	C	C	C	C	C	C	C	C
C. Metal Production	0.09	0.09	0.09	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07
D. Other Production	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Production of Halocarbons and SF ₆													
F. Consumption of Halocarbons and SF ₆													
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
4. Agriculture	64.25	64.25	64.77	64.12	65.89	66.97	67.62	67.77	72.13	75.41	80.33	86.35	90.00
A. Enteric Fermentation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Manure Management	1.70	1.70	1.88	2.07	2.32	2.56	2.65	2.71	2.82	3.14	3.37	3.60	3.68
C. Rice Cultivation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. Agricultural Soils	48.84	48.84	49.29	48.90	49.83	50.21	49.50	49.06	52.17	55.01	58.04	60.84	62.21
E. Prescribed Burning of Savannas	13.42	13.42	13.33	12.88	13.45	13.91	15.17	15.66	16.78	16.89	18.56	21.55	23.75
F. Field Burning of Agricultural Residues	0.28	0.28	0.27	0.27	0.29	0.30	0.31	0.33	0.36	0.36	0.36	0.36	0.36
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5. Land-Use Change and Forestry	3.24	3.24	2.98	2.57	2.69	2.72	2.46	2.34	2.40	2.33	2.25	1.95	1.85
A. Changes in Forest and Other Woody Biomass Stocks	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Forest and Grassland Conversion	2.17	2.17	1.88	1.52	1.66	1.75	1.43	1.35	1.35	1.29	1.26	1.10	0.98
C. Abandonment of Managed Lands	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. CO ₂ Emissions and Removals from Soil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Other	1.07	1.07	1.10	1.04	1.02	0.97	1.03	1.00	1.05	1.04	0.99	0.85	0.86
6. Waste	1.56	1.56	1.58	1.60	1.61	1.63	1.65	1.67	1.69	1.71	1.73	1.75	1.78
A. Solid Waste Disposal on Land	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B. Waste-water Handling	1.56	1.56	1.58	1.60	1.61	1.63	1.65	1.67	1.69	1.71	1.73	1.75	1.78
C. Waste Incineration	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
D. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Memo Items:													
International Bunkers	0.19	0.19	0.19	0.19	0.20	0.22	0.25	0.26	0.26	0.28	0.29	0.30	0.31
Aviation	0.13	0.13	0.13	0.14	0.15	0.16	0.17	0.19	0.19	0.22	0.22	0.22	0.24
Marine	0.06	0.06	0.05	0.05	0.05	0.06	0.07	0.08	0.07	0.06	0.07	0.08	0.07
Multilateral Operations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CO₂ Emissions from Biomass													

1. Speciated emissions from Ammonia Production, Nitric Acid Production, and Soda Ash Production and Use are Confidential. These emissions are reported in Table 10s5 as Confidential emissions reported as CO₂-e.

TABLE 10 EMISSION TRENDS (HFCs, PFCs and SF₆)
(Sheet 4 of 6)

Australia
2001
Submission 2003

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	(Gg)												
Emissions of HFCs— CO ₂ equivalent (Gg)	1,126.27	1,126.27	1,126.27	1,053.94	1,446.59	936.01	977.42	602.54	907.09	1,311.25	1,694.44	2,084.83	2,344.90
HFC-23	0.10	0.10	0.10	0.09	0.12	0.07	0.06	NO	NO	NO	NO	NO	NO
HFC-32	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-41	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-43-10mee	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-125	NE	NE	NE	NE	NE	0.02	0.03	0.05	0.05	0.06	0.07	0.08	0.08
HFC-134	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-134a	NE	NE	NE	NE	NE	0.00	0.05	0.22	0.42	0.69	0.94	1.19	1.39
HFC-152a	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-143	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-143a	NE	NE	NE	NE	NE	0.02	0.03	0.05	0.06	0.07	0.07	0.09	0.08
HFC-227ea	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-236fa	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
HFC-245ca	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Emissions of PFCs— CO ₂ equivalent (Gg)	3,938.28	3,938.28	3,941.47	3,935.10	2,833.07	1,847.57	1,309.06	1,205.39	1,050.67	1,396.99	981.99	1,103.21	1,527.04
CF ₄	0.51	0.51	0.51	0.51	0.37	0.24	0.17	0.16	0.14	0.18	0.13	0.14	0.20
C ₂ F ₆	0.07	0.07	0.07	0.07	0.05	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.03
C ₃ F ₈	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
C ₄ F ₁₀	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
c-C ₄ F ₈	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
C ₃ F ₁₂	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
C ₆ F ₁₄	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Emissions of SF ₆ — CO ₂ equivalent (Gg)	NE	NE	NE	NE	NE	NE	NE	8.60	5.98	3.66	3.59	2.39	NE
SF ₆	NE	NE	NE	NE	NE	NE	NE	0.00	0.00	0.00	0.00	0.00	NE

Chemical	GWP
HFCs	
HFC-23	11700
HFC-32	650
HFC-41	150
HFC-43-10mee	1300
HFC-125	2800
HFC-134	1000
HFC-134a	1300
HFC-152a	140
HFC-143	300
HFC-143a	3800
HFC-227ea	2900
HFC-236fa	6300
HFC-245ca	560
PFCs	
CF ₄	6500
C ₂ F ₆	9200
C ₃ F ₈	7000
C ₄ F ₁₀	7000
c-C ₄ F ₈	8700
C ₃ F ₁₂	7500
C ₆ F ₁₄	7400
SF ₆	23900

TABLE 10 EMISSION TRENDS (SUMMARY)
(Sheet 5 of 6)

Australia
2001
Submission 2003

GREENHOUSE GAS EMISSIONS	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO ₂ equivalent (Gg)												
Net CO ₂ emissions/removals	363,230.98	363,230.98	341,284.72	327,936.56	332,695.42	340,556.46	338,396.03	344,309.22	348,489.26	372,753.24	369,594.83	365,526.10	361,874.10
CO ₂ emissions (without LUCF)	277,860.61	277,860.61	279,599.68	282,044.54	285,510.75	291,315.73	301,038.02	310,858.22	318,169.85	334,478.37	344,148.95	348,983.64	354,554.58
Confidential emissions reported as CQ-e ⁽¹⁾	1,732.00	1,732.00	1,593.44	1,715.43	1,726.78	1,859.71	1,816.93	1,970.11	1,958.03	2,132.86	2,019.63	2,076.35	2,754.06
CH ₄	121,900.36	121,900.36	121,251.08	120,138.89	118,911.69	117,508.96	118,822.74	118,609.02	120,902.33	122,570.35	122,204.60	124,810.76	125,235.39
N ₂ O	23,894.67	23,894.67	24,264.32	24,182.57	25,049.37	25,680.78	26,102.50	26,375.69	27,999.49	29,305.50	31,083.00	33,145.92	34,365.40
HFCs	1,126.27	1,126.27	1,126.27	1,053.94	1,446.59	936.01	977.42	602.54	907.09	1,311.25	1,694.44	2,084.83	2,344.90
PFCs	3,938.28	3,938.28	3,941.47	3,935.10	2,833.07	1,847.57	1,309.06	1,205.39	1,050.67	1,396.99	981.99	1,103.21	1,527.04
SF ₆	NE	NE	NE	NE	NE	NE	NE	8.60	5.98	3.66	3.59	2.39	NE
Total (with net CO₂ emissions/removals)	515,822.56	515,822.56	493,461.31	478,962.47	482,662.92	488,389.49	487,424.68	493,080.58	501,312.86	529,473.85	527,582.08	528,749.56	528,100.88
Total (without CO₂ from LUCF)	430,452.19	430,452.19	431,776.26	433,070.45	435,478.25	439,148.77	450,066.67	459,629.57	470,993.45	491,198.98	502,136.20	512,207.10	520,781.36

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO ₂ equivalent (Gg)												
1. Energy	286,243.09	286,243.09	288,115.39	294,137.40	296,986.38	300,915.69	313,362.45	323,134.50	331,587.72	349,674.62	356,777.21	364,009.32	368,971.79
2. Industrial Processes	26,121.36	26,121.36	25,625.94	23,430.11	22,797.63	23,352.73	22,796.32	22,554.85	22,678.20	23,887.35	24,345.77	24,095.12	24,916.24
3. Solvent and Other Product Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Agriculture	95,074.37	95,074.37	95,460.91	93,847.46	93,330.48	92,402.82	92,635.93	92,777.66	95,245.64	96,494.49	99,519.86	103,025.26	105,766.47
5. Land-Use Change and Forestry	93,097.84	93,097.84	68,637.33	51,743.26	53,407.91	55,634.30	42,929.48	38,731.30	35,675.58	43,456.24	30,473.57	20,909.87	11,371.03
6. Waste	15,285.90	15,285.90	15,621.73	15,804.24	16,140.52	16,083.95	15,700.50	15,882.27	16,125.72	15,961.15	16,465.66	16,709.99	17,075.34
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1. Includes confidential emissions of CQ from Ammonia Production (2B1) and Soda Ash Production and Use (2A4), and N₂O from Nitric Acid Production (2B2).

TABLE 10 EMISSIONS TRENDS (CO₂-e)
(Sheet 6 of 6)

Australia
2001
Submission 2003

	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	(Gg)												
1. Energy	286,243.09	286,243.09	288,115.39	294,137.40	296,986.38	300,915.69	313,362.45	323,134.50	331,587.72	349,674.62	356,777.21	364,009.32	368,971.79
A. Fuel Combustion (Sectoral Approach)	257,478.85	257,478.85	260,105.15	264,995.26	268,697.11	273,116.90	282,953.04	293,385.71	301,195.07	317,179.36	326,023.91	331,120.30	336,761.08
1. Energy Industries	142,283.89	142,283.89	145,792.61	149,020.09	150,296.69	151,362.82	157,335.68	163,881.70	170,033.76	185,479.71	189,873.98	193,195.15	198,987.82
2. Manufacturing Industries and Construction	37,628.27	37,628.27	37,066.87	36,923.72	37,383.32	38,888.87	39,436.62	40,584.96	40,153.22	40,525.77	43,907.13	42,886.28	42,313.57
3. Transport	61,979.86	61,979.86	61,586.86	62,966.05	64,401.43	66,098.47	68,978.19	71,581.10	73,158.36	73,467.27	74,592.28	77,000.89	77,246.68
4. Other Sectors	14,325.20	14,325.20	14,443.22	14,827.69	15,321.11	15,386.62	15,789.98	15,812.35	16,303.08	16,380.01	16,411.29	16,755.24	16,852.52
5. Other	1,261.63	1,261.63	1,215.59	1,257.71	1,294.56	1,380.12	1,412.58	1,525.59	1,546.64	1,326.59	1,239.23	1,282.74	1,360.48
B. Fugitive Emissions from Fuels	28,764.25	28,764.25	28,010.24	29,142.15	28,289.27	27,798.79	30,409.41	29,748.79	30,392.65	32,495.26	30,753.30	32,889.02	32,210.71
1. Solid Fuel	15,816.36	15,816.36	15,979.04	16,619.63	16,611.41	16,326.61	17,480.17	17,786.50	18,176.44	20,048.78	18,969.85	19,638.07	18,445.52
2. Oil and Natural Gas	12,947.88	12,947.88	12,031.20	12,522.52	11,677.86	11,472.19	12,929.24	11,962.29	12,216.22	12,446.49	11,783.44	13,250.95	13,765.20
2. Industrial Processes	26,121.36	26,121.36	25,625.94	23,430.11	22,797.63	23,352.73	22,796.32	22,554.85	22,678.20	23,887.35	24,345.77	24,095.12	24,916.24
A. Mineral Products	4,763.45	4,763.45	4,477.14	4,299.14	4,507.25	5,210.39	5,008.05	5,076.15	5,008.60	5,433.39	5,355.99	5,150.78	5,099.94
B. Chemical Industry	1,732.00	1,732.00	1,593.44	1,715.43	1,726.78	1,859.71	1,816.93	1,970.11	1,958.03	2,132.86	2,019.63	2,076.35	2,754.06
C. Metal Production	18,499.64	18,499.64	18,429.10	16,361.61	15,117.02	15,346.62	14,993.92	14,897.44	14,798.50	15,006.19	15,272.13	14,780.76	14,717.35
D. Other Production	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
E. Production of Halocarbons and SF ₆	1,126.27	1,126.27	1,126.27	1,053.94	1,446.59	811.70	718.85	NO	NO	NO	NO	NO	NO
F. Consumption of Halocarbons and SF ₆	NE	NE	NE	NE	NE	124.31	258.57	611.15	913.07	1,314.91	1,698.03	2,087.22	2,344.90
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Agriculture	95,074.37	95,074.37	95,460.91	93,847.46	93,330.48	92,402.82	92,635.93	92,777.66	95,245.64	96,494.49	99,519.86	103,025.26	105,766.47
A. Enteric Fermentation	67,468.47	67,468.47	67,704.15	66,430.81	64,995.27	63,485.50	62,927.20	62,732.85	63,270.17	63,358.32	64,188.14	64,495.65	65,204.54
B. Manure Management	2,035.60	2,035.60	2,092.34	2,179.13	2,318.67	2,445.89	2,492.60	2,531.81	2,636.94	2,821.01	2,932.97	3,027.60	3,053.71
C. Rice Cultivation	490.50	490.50	523.78	536.08	598.63	606.24	648.74	702.28	722.05	724.47	670.72	741.34	737.90
D. Agricultural Soils	15,140.27	15,140.27	15,280.50	15,159.54	15,446.11	15,564.23	15,345.02	15,209.67	16,174.12	17,054.53	17,993.55	18,860.84	19,285.67
E. Prescribed Burning of Savannas	9,667.99	9,667.99	9,598.03	9,275.25	9,685.99	10,015.91	10,925.88	11,282.61	12,085.87	12,165.26	13,368.67	15,525.68	17,108.16
F. Field Burning of Agricultural Residues	271.55	271.55	262.12	266.65	285.82	285.05	296.50	318.43	356.50	370.90	365.81	374.14	376.49
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5. Land-Use Change and Forestry	93,097.84	93,097.84	68,637.33	51,743.26	53,407.91	55,634.30	42,929.48	38,731.30	35,675.58	43,456.24	30,473.57	20,909.87	11,371.03
A. Changes in Forest and Other Woody Biomass Stocks	-24,598.42	-24,598.42	-24,084.18	-24,543.87	-24,154.58	-23,173.16	-22,380.22	-22,431.63	-22,517.90	-22,709.30	-23,298.18	-23,349.21	-22,669.46
B. Forest and Grassland Conversion	120,371.03	120,371.03	95,347.36	79,003.50	80,305.54	81,621.96	68,042.15	63,946.64	60,898.28	68,881.42	56,567.78	47,259.93	37,016.30
C. Abandonment of Managed Lands	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. CO ₂ Emissions and Removals from Soil	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54	-4,223.54
E. Other	1,548.77	1,548.77	1,597.69	1,507.17	1,480.49	1,409.04	1,491.09	1,439.84	1,518.75	1,507.67	1,427.52	1,222.69	1,247.73
6. Waste	15,285.90	15,285.90	15,621.73	15,804.24	16,140.52	16,083.95	15,700.50	15,882.27	16,125.72	15,961.15	16,465.66	16,709.99	17,075.34
A. Solid Waste Disposal on Land	13,623.32	13,623.32	13,937.81	14,099.77	14,419.29	14,344.40	13,922.98	14,084.77	14,302.69	14,116.30	14,598.63	14,820.66	15,160.68
B. Waste-water Handling	1,662.58	1,662.58	1,683.92	1,704.47	1,721.23	1,739.55	1,760.69	1,783.97	1,806.09	1,827.72	1,849.54	1,873.02	1,898.35
C. Waste Incineration	NE	NE	NE	NE	NE	NE	16.83	13.53	16.94	17.13	17.49	16.30	16.30
D. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Emissions/Removals with LUCF	515,822.56	515,822.56	493,461.31	478,962.47	482,662.92	488,389.49	487,424.68	493,080.58	501,312.86	529,473.85	527,582.08	528,749.56	528,100.88
Total Emissions without LUCF	422,724.72	422,724.72	424,823.97	427,219.21	429,255.01	432,755.19	444,495.20	454,349.28	465,637.28	486,017.61	497,108.51	507,839.69	516,729.85
Memo Items:													
International Bunkers	6,461.40	6,461.40	6,438.86	6,646.42	7,053.58	7,435.31	8,613.12	9,115.69	9,105.41	9,562.31	9,844.63	10,194.71	10,725.41
Aviation	4,385.62	4,385.62	4,562.49	4,840.41	5,247.80	5,403.82	5,912.32	6,370.59	6,561.81	7,300.53	7,336.08	7,399.42	8,227.70
Marine	2,075.79	2,075.79	1,876.37	1,806.01	1,805.78	2,031.49	2,700.80	2,745.10	2,543.60	2,261.79	2,508.55	2,795.29	2,497.71
Multilateral Operations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
CO₂ Emissions from Biomass	16,514.85	16,514.85	16,641.90	15,141.52	16,799.68	17,618.70	18,447.90	18,437.02	20,275.50	20,492.97	20,145.07	20,146.07	18,254.75