Coal extraction data

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Climate Mitigation Services
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Anglo American plc

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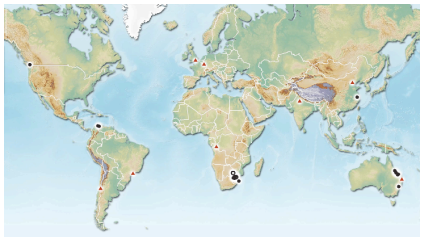
yellow column indicates original reported units

Production / Extraction data

Year	Steam coal		Metallurgical Coal		Total Coal	
	Gross production	Gross production	Gross production	Gross production	Gross production	Gross production
	Million tons/yr	Million tonnes/yr	Million tons/yr	Million tonnes/yr	Million tons/yr	Million tonnes/yr
			Amcoal 1880-1945			
1905						
1906						
1907						
1908						
1909	Vereeniging Estates	0.31				0.3
1910	AnnRpt 1910	0.36				0.4
1911	interpolated	0.39				0.4
1912	interpolated	0.42				0.4
1913	interpolated	0.45				0.4
1914	interpolated	0.47				0.5
1915	interpolated	0.50				0.5
1916	interpolated	0.53				0.5
1917	interpolated	0.56				0.6
1918	interpolated	0.59				0.6
1919	interpolated	0.62				0.6
1920	AnnRpt 1920	0.65				0.6
1921	interpolated	0.94				0.9
1922	interpolated	1.23				1.2
1923	interpolated	1.52				1.5
1924	interpolated	1.81				1.8
1925	interpolated	2.10				2.1
1926	interpolated	2.39				2.4
1927	interpolated	2.68				2.7
1928	AnnRpts	2.97				3.0
1929	AnnRpts	2.98				3.0
1930	AnnRpt 1930	3.00				3.0
1931	interpolated	3.27				3.3
1932	interpolated	3.54				3.5
1933	interpolated	3.80				3.8
1934	interpolated	4.07				4.1
1935	interpolated	4.34				4.3
1936	interpolated	4.61				4.6
1937	interpolated	4.88				4.9
1938	interpolated	5.15				5.1
1939	interpolated	5.41				5.4
1940	AnnRpt 1940	5.68				5.7
1941	interpolated	6.30				6.3
1942	interpolated	6.91				6.9
1943	interpolated	7.53				7.5
1944	interpolated	8.14				8.1
1945	interpolated	8.76				8.8
1946	interpolated	9.37				9.4
1947	interpolated	9.99				10.0
1948	interpolated	10.60				10.6
1949	AnnRpts	11.22				11.2

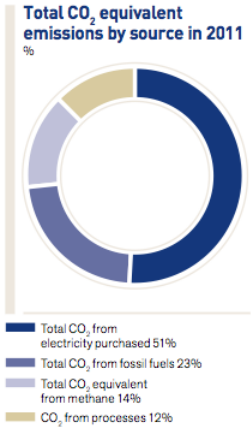
Note: Coal sales 1974-1997 is for South African mines only.
1999-2004 include production in Australia, Colombia, and South Africa.

72.5% thermal
12.1% metallurgical



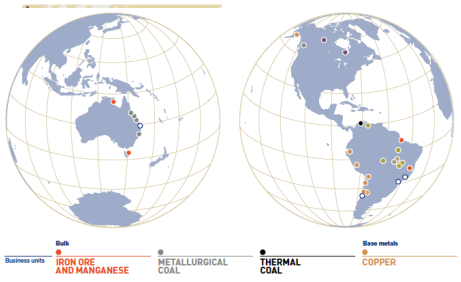
Anglo American AnnRpt 2017

AngloAmer buys Amcoal in 1945



Anglo American SDR 2011, page 53.

Incline conveyor and silo at Zibulo Mine in RSA. AnnRpt 2011, p67.

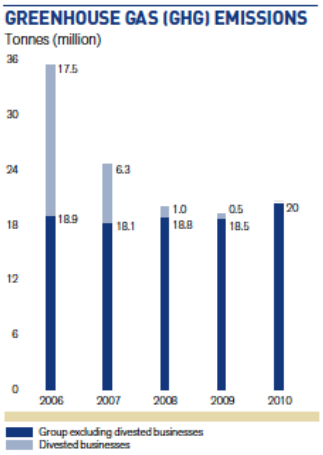


Anglo American AnnRpt 2011, page 3.

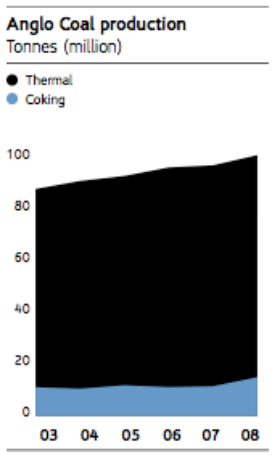
	B	D	E	G	H	K
62	1950	AnnRpts	10.99			11.0
63	1951	AnnRpts	10.79			10.8
64	1952	interpolated	11.49			11.5
65	1953	AnnRpts	12.19		Total South African	12.2
66	1954	AnnRpts	11.95		Coal sales 1955-67	12.0
67	1955	interpolated	12.33		33.06	12.3
68	1956	AnnRpts	12.70	Vereeniging	35.50	12.7
69	1957	AnnRpts	12.78	coking coal	37.69	12.8
70	1958	AnnRpts	13.84	1.43	39.94	13.8
71	1959	AnnRpts	13.70	1.62	39.19	13.7
72	1960	AnnRpts	14.39	1.97	41.96	14.4
73	1961	AnnRpts	14.58	1.76	44.63	14.6
74	1962	AnnRpts	14.65	1.70	45.21	14.7
75	1963	AnnRpts	14.57		46.14	14.6
76	1964	AnnRpts	15.16	1.77	48.62	15.2
77	1965	AnnRpts	18.76	not added to total	52.45	18.8
78	1966	interpolated	17.91		51.72	17.9
79	1967	AnnRpts	17.07		53.27	17.1
80	1968	interpolated	14.57		not added to total	14.6
81	1969	AnnRpts	12.07			12.1
82	1970	AnnRpts	13.12			13.1
83	1971	interpolated	14.36			14.4
84	1972	interpolated	15.60			15.6
85	1973	interpolated	16.84		metallurgical coal	16.8
86	1974	Anglo AnnRpts	18.08	Anglo AnnRpts	0.57	18.6
87	1975	Dec75:	19.49		0.86	20.4
88	1976	Dec76:	22.32		0.89	23.2
89	1977	Dec77:	24.37		2.45	26.8
90	1978	Dec78:	30.34		2.75	33.1
91	1979	Dec79:	31.05		2.73	33.8
92	1980	Dec80:	31.94		4.01	36.0
93	1981	Dec81:	31.90		3.90	35.8
94	1982	Mar83:	31.10		2.90	34.0
95	1983	Mar84:	32.00		2.20	34.2
96	1984	Mar85:	32.50		4.10	36.6
97	1985	Mar86:	32.40		4.10	36.5
98	1986	Mar87:	36.30		4.60	40.9
99	1987	Mar88:	39.00		3.50	42.5
100	1988	Mar89:	40.29		5.21	45.5
101	1989	Mar90:	38.06		5.07	43.1
102	1990	Mar91:	38.76		4.70	43.5
103	1991	Mar92:	37.72		4.63	42.4
104	1992	Mar93:	37.24		4.36	41.6
105	1993	Mar94:	41.27		4.20	45.5
106	1994	Mar95:	40.96		4.74	45.7
107	1995	Mar96:	42.06		4.14	46.2
108	1996	Apr96-Mar97:	44.21		4.11	48.3
109	1997	Apr97-Mar98:	48.67		3.90	52.6
110	1998		59.80	interpolated	4.51	64.3
111	1999	Acq 1/3 of Cerrejon	61.80	interpolated	4.44	66.2
112	2000		64.80	interpolated	8.25	73.1
113	2001		65.47		12.07	77.5
114	2002		67.61		12.57	80.2
115	2003		75.57		10.94	86.5
116	2004		79.29		10.35	89.6
117	2005		79.50	approximate;	11.50	91.0
118	2006		81.00	estimated from	11.00	92.0
119	2007		81.00	column chart	12.00	93.0
120	2008		83.00	(see above)	16.00	99.0
121	2009		83.48		14.02	97.5
122	2010		82.98		16.07	99.0
123	2011	67.44	13.43		14.19	95.1
124	2012	68.68	12.97		17.66	99.3
125	2013	67.59	12.50		18.66	98.8
126	2014		79.31	Anglo American Factbook	20.91	100.2
127	2015		73.68	Anglo American Factbook	21.21	94.9
128	2016		50.70		20.90	71.6
129	2017		29.20	AngloAmer AnnRpt 2018	19.70	48.9
130	2018		28.60	AngloAmer AnnRpt 2018	21.80	50.4
132	Total		2,291		383	2,675	3,162

134	Coal Types:	Thermal	85.67%	Metallurgical	14.33%	(1974-2018)

Metallurgical factor applied to 1974-2018 only



Anglo American AnnRpt 2010, page 28.



Shell Coal million tonnes
8.80
11.84
14.96
18.00
20.00
23.00
23.00
28.00
27.00
30.00
33.00
30.95
28.90
26.85
24.80
23.10
17.70
18.50
19.80
14.20
17.10
Acquired 2000

Coal bed methane Bcf
na

Production in South Africa and Colombia not shown in AnnRpt 2013.
Yet appear on their operations map. Disposition?

Key
- Open cut
- Underground
- Open cut and underground

Thermal
- 1 100% Callide
- 2 88% Drayton

Metallurgical
- 3 51% Dawson Complex
- 4 70% Foxleigh
- 5 70% German Creek*
- 6 23% Jellinbah
- 7 88% Moranbah North

* The German Creek operation includes both Capcoal open cut and underground operations.

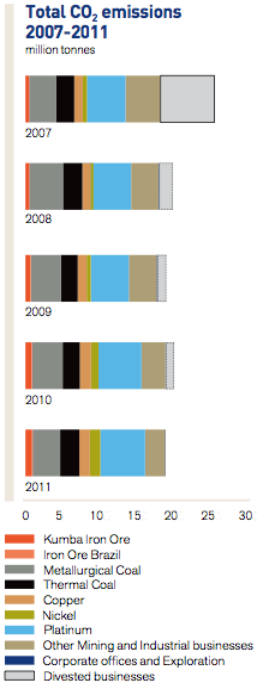
Metallurgical
- 100% Peace River Coal

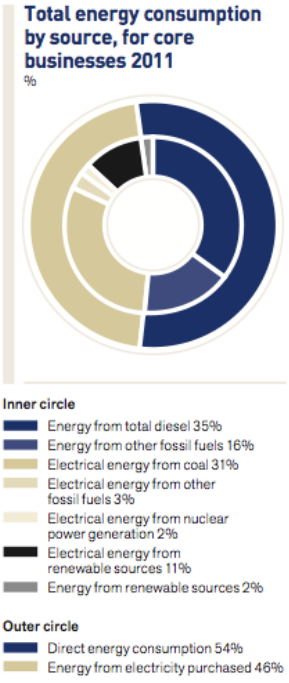
Anglo American Factbook 2013, page

Environment 2010

	Scope 1		Scope 2	Scope 1 + 2					
	CO_2 from fossil fuels and processes (Mt CO_2e)	CO_2 from methane (Mt CO_2e)	CO_2 from electricity purchased (Mt CO_2e)	Total emissions (Mt CO_2e)	Energy from fossil fuels (million GJ)	Energy from renewable fuels consumed (million GJ)	Energy from electricity purchased (million GJ)	Total energy (million GJ)	Water used for primary activities (million m³)
Kumba Iron Ore	0.32	0	0.52	0.84	4.54	0	1.83	6.37	8.78
Iron Ore Brazil	0.07	0	0.01	0.07	0.95	0	0.48	1.43	4.25
Metallurgical Coal	0.59	2.94	0.60	4.14	7.95	0	2.42	10.37	11.15
Thermal Coal	0.93	0.51	0.86	2.30	2.75	0	3.02	5.77	7.54
Copper	0.90	0	0.59	1.50	6.18	0	5.96	12.15	26.97
Nickel	0.78	0	0.22	1.00	6.86	0.83	2.97	10.66	5.28
Platinum	0.46	0	5.31	5.77	5.60	0	18.56	24.16	28.87
OMI	1.87	0.03	1.26	3.15	16.03	0.76	5.94	22.73	12.78
Corporate offices and Exploration	0.01	0	0.03	0.04	0.21	0	0.10	0.31	0.11
Divested businesses	0.18	0	1.00	1.18	2.63	0	4.37	7.00	8.79
Anglo American	6.12	3.47	10.40	19.99	53.70	1.58	45.65	100.93	114.51

Anglo American SustDevRpt 2011, page 65.





Anglo American thermal and metallurgical coal production in Australia 2010-2013.

Production (tonnes)	2013	2012	2011	2010
Metallurgical Coal segment				
Australia				
Export Metallurgical	**16,971,800**	16,287,400	13,253,400	14,701,800
Thermal	**12,503,400**	12,970,500	13,426,500	14,460,500
Canada				
Export Metallurgical	**1,683,800**	1,376,900	936,300	868,000
Total Metallurgical Coal segment	**31,159,000**	**30,634,800**	**27,616,200**	**30,030,300**
Australia				
Callide	**6,317,800**	7,464,000	8,038,700	8,515,600
Capcoal	**6,061,400**	6,022,400	5,047,900	5,460,300
Dawson	**3,985,700**	4,593,500	3,904,600	3,584,400
Drayton	**3,710,700**	3,663,300	3,991,900	4,206,000
Foxleigh	**1,966,600**	1,896,000	1,417,100	1,665,700
Jellinbah	**2,516,500**	2,073,200	1,829,600	1,792,500
Moranbah North	**4,916,500**	3,545,500	2,450,100	3,937,800
Canada				
Peace River Coal	**1,683,800**	1,376,900	936,300	868,000
Total	**31,159,000**	**30,634,800**	**27,616,200**	**30,030,300**

Anglo American Factbook 2013, page 41.

Operating performance

Attributable production ('000 tonnes)

	2013	2012
South Africa export thermal coal	**17,031**	17,132
Colombia export thermal coal	**11,002**	11,549
South Africa Eskom coal	**33,567**	33,706
South Africa domestic other[1]	**5,992**	6,293

[1] Includes domestic metallurgical coal of 74,100 tonnes for 2012.

Anglo American Annual Rpt 2013, page 67.

Operating performance

Attributable production ('000)

	2011	2010
RSA thermal coal	**21,388**	21,612
RSA Eskom coal	**35,296**	36,403
Colombian export thermal coal	**10,752**	10,060

Anglo American Annual Rpt 2011, page 66.

Anglo American est. of scope 3 emissions, 2011	176.8	MtCO2
This study, 2010:	#REF!	MtCO2

Financial and operational metrics

	Production volume (Mt)[1]	Sales volume (Mt)[2]	Price ($/t)[3]	Unit cost[4] ($/t)[4]	Group revenue[5] ($m)	Underlying EBITDA[1] ($m)	Underlying EBITDA margin[5]	Underlying EBIT[1] ($m)	Capex[6] ($m)	ROCE[7]
Coal	**50.4**	**50.4**	**–**	**–**	**7,788**	**3,196**	**46%**	**2,538**	**722**	**67%**
Prior year	48.9	49.0	–	–	7,211	2,868	46%	2,274	568	67%
Metallurgical Coal	**21.8**	**22.0**	**190**	**64**	**4,231**	**2,210**	**52%**	**1,774**	**574**	**80%**
Prior year	19.7	19.8	185	61	3,675	1,977	54%	1,594	416	86%
Thermal Coal – South Africa	**18.4**	**18.3**	**87**	**44**	**2,719**	**695**	**37%**	**566**	**148**	**68%**
Prior year	18.6	18.6	76	44	2,746	588	32%	466	152	54%
Thermal Coal – Colombia	**10.2**	**10.1**	**83**	**36**	**838**	**388**	**46%**	**295**	**–**	**35%**
Prior year	10.6	10.6	75	31	790	385	49%	296	–	35%
Projects and corporate	**–**	**–**	**–**	**–**	**–**	**(97)**	**–**	**(97)**	**–**	**–**
Prior year	–	–	–	–	–	(82)	–	(82)	–	–

(1) Production volumes are saleable tonnes. South African production volumes include export primary production, secondary production sold into export markets and production sold domestically at export parity pricing and excludes Eskom-tied operations production of 2.8 Mt (2017: 23.9 Mt) and other domestic production of 10.9 Mt (2017: 7.5 Mt). Metallurgical Coal production volumes exclude thermal coal production of 1.4 Mt (2017: 1.6 Mt).
(2) South African sales volumes include export primary production, secondary production sold into export markets and production sold domestically at export parity pricing and exclude domestic sales of 10.3 Mt (2017: 8.2 Mt), Eskom-tied operations sales of 2.8 Mt (2017: 23.9 Mt) and non-equity traded sales of 9.5 Mt (2017: 7.6 Mt). Metallurgical Coal sales volumes exclude thermal coal sales of 1.6 Mt (2017: 1.8 Mt).
(3) Metallurgical Coal realised price is the weighted average hard coking coal and PCI sales price achieved. Thermal Coal – South Africa realised price is the weighted average export thermal coal price achieved. Excludes third party sales.
(4) FOB cost per saleable tonne, excluding royalties. Metallurgical Coal excludes study costs. Thermal Coal – South Africa unit cost is for the trade operations.
(5) Excludes impact of third party sales and Eskom-tied operations.

Climate change

The Group's operations are exposed to changes in climate and the need to comply with changes in the regulatory environment aimed at reducing the effects of climate change.

Impact: Potential impacts from climate change are difficult to assess and will depend on the circumstances at individual sites, but could include increased rainfall, flooding, water shortages and higher average temperatures. These may increase costs, reduce production levels or impact the results of operations.

Policy developments at an international, national and sub-national level, including those related to the 1997 Kyoto Protocol and subsequent international agreements and emissions trading schemes, could adversely affect the profitability of the Group. Regulatory measures may affect energy prices, demand or the margins achieved for carbon intensive products such as coal.

Root cause: The Group is a significant user of energy and one of the key commodities it produces is coal.

Mitigation: In addition to the initiatives to monitor and limit the impact of operations on the environment, the Group continuously seeks to reduce energy input levels into its operations. The asset optimisation programme seeks to make operations more energy efficient.

Anglo American AnnRpt 2010, page 49.
section on managing risks

Anglo American Annual report 2018, page 67.
Financial and operational metrics

ORE RESERVES AND MINERAL RESOURCES

COAL

estimates as at 31 December 2011

THERMAL COAL

The Coal Reserve and Coal Resource estimates were compiled in accordance with The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves, (The SAMREC Code, 2007) and the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2004) as applicable. The figures reported represent 100% of the Coal Reserves and Coal Resources, the percentage attributable to Anglo American plc is stated separately. Rounding of figures may cause computational discrepancies. Anglo American Thermal Coal comprises the dominantly export and domestic thermal coal operations, located in Colombia and South Africa.

Thermal Coal – Colombia Operations				ROM Tonnes[3]		Yield[4]		Saleable Tonnes[5]		Saleable Quality[5]	
COAL RESERVES[1]	Attributable %[2]	Mine Life	Classification	2011	2010	2011	2010	2011	2010	2011	2010
Cerrejón (OC)	33.3	20		Mt	Mt	ROM %	ROM %	Mt	Mt	kcal/kg	kcal/kg
Thermal – Export			Proved	718.8	659.0	96.8	95.2	695.5	634.8	6,300	6,230
			Probable	86.0	64.1	96.8	95.3	83.2	61.7	6,240	6,230
			Total	**804.8**	**723.1**	**96.8**	**95.2**	**778.7**	**696.5**	**6,290**	**6,230**
Colombia Thermal – Export	33.3									kcal/kg	kcal/kg
			Proved	718.8	659.0	96.8	95.2	695.5	634.8	6,300	6,230
			Probable	86.0	64.1	96.8	95.3	83.2	61.7	6,240	6,230
			Total	**804.8**	**723.1**	**96.8**	**95.2**	**778.7**	**696.5**	**6,290**	**6,230**

Thermal Coal – South Africa Operations				ROM Tonnes[3]		Yield[4]		Saleable Tonnes[5]		Saleable Quality[5]	
COAL RESERVES[1]	Attributable %[2]	Mine Life	Classification	2011	2010	2011	2010	2011	2010	2011	2010
Goedehoop (UG&OC)	100	11		Mt	Mt	ROM %	ROM %	Mt	Mt	kcal/kg	kcal/kg
Thermal – Export			Proved	37.4	46.8	53.0	53.9	20.2	25.7	6,230	6,220
			Probable	48.6	45.6	51.7	55.0	25.6	25.6	6,210	6,220
			Total	**86.0**	**92.4**	**52.3**	**54.4**	**45.9**	**51.3**	**6,220**	**6,220**
Greenside (UG)	100	11								kcal/kg	kcal/kg
Thermal – Export			Proved	25.8	37.3	58.1	58.6	15.5	22.7	6,200	6,190
			Probable	21.9	2.3	53.9	62.8	12.3	1.5	6,190	6,190
			Total	**47.8**	**39.6**	**56.2**	**58.8**	**27.8**	**24.2**	**6,200**	**6,190**
Isibonelo (OC)	100	14								kcal/kg	kcal/kg
Synfuel			Proved	69.9	74.9	100	100	69.9	74.9	4,590	4,640
			Probable	–	–	–	–	–	–	–	–
			Total	**69.9**	**74.9**	**100**	**100**	**69.9**	**74.9**	**4,590**	**4,640**
Kleinkopje (OC)	100	13								kcal/kg	kcal/kg
Thermal – Export			Proved	64.5	77.5	35.9	37.1	23.7	29.0	6,170	6,220
			Probable	12.0	12.3	45.9	45.8	5.6	5.7	6,180	6,240
			Total	**76.4**	**89.8**	**37.5**	**38.3**	**29.3**	**34.7**	**6,170**	**6,220**
										kcal/kg	kcal/kg
Thermal – Domestic			Proved			33.8	31.7	21.8	24.9	4,550	4,460
			Probable			–	–	–	–	–	–
			Total			**28.5**	**27.4**	**21.8**	**24.9**	**4,550**	**4,460**
Kriel (UG&OC)	73.0	14								kcal/kg	kcal/kg
Thermal – Domestic			Proved	46.0	61.2	100	100	46.0	61.2	4,790	4,800
			Probable	67.5	69.6	100	100	67.5	69.6	4,430	4,450
			Total	**113.5**	**130.8**	**100**	**100**	**113.5**	**130.8**	**4,580**	**4,610**
Landau (OC)	100	9								kcal/kg	kcal/kg
Thermal – Export			Proved	36.4	44.7	48.5	50.7	17.8	23.0	6,240	6,250
			Probable	24.4	24.7	48.5	48.7	11.9	12.2	6,230	6,250
			Total	**60.7**	**69.4**	**48.5**	**50.0**	**29.8**	**35.2**	**6,240**	**6,250**
										kcal/kg	kcal/kg
Thermal – Domestic			Proved			8.8	8.5	3.2	3.8	4,550	4,100
			Probable			7.3	8.5	1.8	2.1	3,970	4,400
			Total			**8.2**	**8.5**	**5.0**	**6.0**	**4,340**	**4,210**
Mafube (OC)	50.0	19								kcal/kg	kcal/kg
Thermal – Export			Proved	24.8	30.1	46.5	49.0	11.6	14.8	6,220	6,270
			Probable	66.6	–	33.1	–	22.2	–	6,210	–
			Total	**91.3**	**30.1**	**36.7**	**49.0**	**33.8**	**14.8**	**6,210**	**6,270**
										kcal/kg	kcal/kg
Thermal – Domestic			Proved			27.1	23.1	6.8	6.9	5,460	5,490
			Probable			37.3	–	25.0	–	5,010	–
			Total			**34.5**	**23.1**	**31.8**	**6.9**	**5,110**	**5,490**
										kcal/kg	kcal/kg
New Denmark (UG)	100	23									
Thermal – Domestic			Proved	30.2	40.4	100	100	30.2	40.4	4,880	4,930
			Probable	80.9	92.9	100	100	80.9	92.9	5,120	5,070
			Total	**111.1**	**133.3**	**100**	**100**	**111.1**	**133.3**	**5,050**	**5,030**

Anglo American Annual Rpt 2011, p. 186.

Coal (tonnes)		
Metallurgical Coal segment		
Australia		
Export metallurgical	**13,253,400**	14,701,800
Thermal	**13,426,500**	14,460,500
	26,679,900	29,162,300
Canada		
Export metallurgical	**936,300**	868,000
Total Metallurgical Coal segment coal production[4]	**27,616,200**	30,030,300
Thermal Coal segment		
South Africa		
Metallurgical	**323,400**	436,500
Thermal (non-Eskom)	**21,388,100**	21,612,000
Eskom	**35,296,000**	36,403,400
	57,007,500	58,451,900
Colombia		
Export thermal	**10,751,700**	10,060,100
Total Thermal Coal segment coal production	**67,759,200**	68,512,000
Other Mining and Industrial segment		
South America		
Thermal	**–**	441,400
Total Other Mining and Industrial segment coal production[4]	**–**	441,400
Total coal production	**95,375,400**	98,983,700
Coal (tonnes)		
Metallurgical Coal segment		
Australia		
Callide	**8,038,700**	8,515,600
Drayton	**3,991,900**	4,206,000
Capcoal	**5,047,900**	5,460,300
Jellinbah	**1,829,600**	1,792,500
Moranbah North	**2,450,100**	3,937,800
Dawson	**3,904,600**	3,584,400
Foxleigh	**1,417,100**	1,665,700
	26,679,900	29,162,300
Canada		
Peace River Coal	**936,300**	868,000
Total Metallurgical Coal segment coal production[4]	**27,616,200**	30,030,300
Thermal Coal segment		
South Africa		
Greenside	**2,853,100**	3,425,000
Goedehoop	**5,200,800**	6,026,200
Isibonelo	**4,338,200**	4,569,100
Kriel	**8,151,700**	9,526,100
Kleinkopje	**4,400,600**	4,423,600
Landau	**4,171,200**	4,085,800
New Denmark	**4,812,600**	5,051,600
New Vaal	**17,399,700**	17,235,300
Mafube	**2,313,100**	2,447,700
Zibulo[5]	**3,366,500**	1,661,500
	57,007,500	58,451,900

	2011	2010
Coal (tonnes) (continued)		
Thermal Coal segment (continued)		
Colombia		
Carbones del Cerrejón	**10,751,700**	10,060,100
Total Thermal Coal segment coal production	**67,759,200**	68,512,000
Other Mining and Industrial segment		
South America		
Carbones del Guasare	**–**	441,400
Total Other Mining and Industrial segment coal production[1]	**–**	441,400
Total coal production	**95,375,400**	98,983,700
Total coal production by commodity (tonnes)		
Metallurgical		
South Africa	**323,400**	436,500
Australia – Export	**13,253,400**	14,701,800
Canada – Export	**936,300**	868,000
Total metallurgical coal production	**14,513,100**	16,006,300
Thermal		
South Africa – Thermal (non-Eskom)	**21,388,100**	21,612,000
South Africa – Eskom	**35,296,000**	36,403,400
Australia	**13,426,500**	14,460,500
South America	**10,751,700**	10,501,500
Total thermal coal production	**80,862,300**	82,977,400
Total coal production	**95,375,400**	98,983,700

Anglo American Annual Rpt 2011, 201-202.

Cell: G11
Comment: Rick Heede:
Coal production by coal mining companies and state-owned enterprises, including subsidiaries of oil and gas companies.
Coal types produced are not ordinarily reported by coal operators (except for metallurgical coal). We distinguish, where possible and reasonably well known, between hard (bituminous and subbituminous) and soft (lignite or peat) coals, especially for the larger companies operating in regions such as Australia and India where soft coals are predominant. Soft coals have lower carbon content per tonne than do hard coals.

Cell: G15
Comment: Rick Heede:
Amcoal (then Vereeniging Estates) opened its first mine in 1882, when 360 tons were mined. Amcoal (1998), p. 3.

Cell: E21
Comment: Rick Heede:
Vereeningen Estates Limited became Anglo American Coal Corporation sometime after 1970. Coal production data courtesy of Ingrid Wlotzka of Pretoria, South Africa.

Most data are for coal production by colliery. Annual reports for 1955-1967 appear to only provide coal sales, but in much larger quantities than the company's actual production (sales in 1955 = 33.06 million tons (note: we assume tonnes), in 1960 = 41.96 million tons, and 1967 = 53.27 million tons). CMS therefore interpolates between known coal production data points instead of using the larger coal sales data.

Cell: G58
Comment: Rick Heede:
"Amcoal is the product of a century of endeavour at the forefront of the South African coal industry. It traces its heritage back to Sammy Marks and the Vereeniging Estates Limited, which was brought under the control of Anglo American Corporation of South Africa Limited in 1945. Anglo merged its various coal interests into Amcoal in 1975, and was instrumental in the growth of coal exports via the Richards Bay Coal Terminal, which opened in 1975."

Amcoal (1998) 100 Years of coal mining: a brief history of AMCOAL, p. 2.

Cell: AA59
Comment: Rick Heede:
Anglo American Sust Dev. Rpt 2011, page 54: “In 2011, the Group's Scope 1 and Scope 2 GHG emissions amounted to 18.8 million tonnes (Mt) of carbon dioxide equivalents (CO2e) (2010: 20.0 Mt). This 6% reduction on our 2010 emissions was due largely to the sale of a number of businesses throughout 2011, as well as a revision of process- emission calculation methodologies at Metallurgical Coal. Our electricity consumption continues to be the principal source of our GHG emissions (51%), followed by our direct use of fossil fuels (23%), methane emissions from coal mining (14%) and process emissions (12%). We have also assessed our indirect Scope 3 emissions, focusing primarily on emissions arising from customers' use of the thermal and metallurgical coal that we produce, as well as on our downstream and upstream transport. These emissions continue to be dominated by the combustion of our coal by consumers; in 2011 this figure amounted to 176.8 Mt of CO2e.” Anglo's production totaled 95.3754 million tonnes (14.513 Mt metallurgical and 80.863 Mt thermal coal) in 2011, compared to 98.9837 Mt in 2010. The 2011 production divided by all scope 3 emissions of 176.8 MtCO2 gives average product emissions less than 1.8537 tCO2/tonne (less than due to Scope 3 including sources in addition to product combustion).
CMS note: this study estimates Anglo's product emissions of 223.2 MtCO2 (2.2545 tCO2/tonne coal). This difference in results indicates that Anglo's production is of average coal rank at sub-bituminous or below. Anglo does not report coal quality of produced coal, but does report quality for measured reserves (AnnRpt, 2011, page 189), at which measured reserves of 2.114 billion tonnes average 5,360 kcal/kg (and 1.240 Gt of indicated reserves average 4,860 kcal/kg).

Cell: G69
Comment: Rick Heede:
Vereeniging Estates Limited (1959 to 1964) Chairman's review, pp. 4-5. The quantities of coking coal listed below are included in the thermal coal data (column D), and are thus not added into the total (column K).

Cell: E76
Comment: Rick Heede:
Vereeniging Estates produced a total of 16.70 million tons of coal of all types. This also includes "Natal and associated collieries", "outside and local trade" and "used in coke manufacture" (0.512, 0.317, and 0.717 million tons, respectively), which CMS subtracts from the reported amount for 1964 in order to be consistant with data for previous years, which are quantities sold; VE does not report produced coal for previous years. The total here, 15.16 million tons, includes coking coal of 1.77 million tons.

Cell: D86
Comment: Rick Heede:
Anglo American Corporation of South Africa Ltd annual reports from 1975 through 1998. These reports detail thermal, industrial, and coking or metallurgical coal sales per year. CMS aggregated industrial and metallurgical coal sales for each year. Energy content is not given by colliery or coal rank.

Cell: G86
Comment: Rick Heede:
Anglo American Corporation of South Africa Ltd annual reports from 1975 through 1998. These reports detail thermal, industrial, and coking or metallurgical coal sales per year. CMS aggregated industrial and metallurgical coal sales for each year. Energy content is not given for by colliery or coal rank.

Cell: Q89
Comment: Rick Heede:
Shell Coal production data for 1979-1999; Anglo acqiured Shell Coal in July 2000. Shell's production, though acquired by Anglo, is allocated to Shell as is protocol for other major oil & gas companies that owend coal assets (e.g., BP, ExxonMobil, Anadarko, and Chevron). See "Shell Coal" worksheet for details.

Cell: E94
Comment: Rick Heede:
Anglo changed the accounting year from Jan-Dec to Apr-Mar, and this year's coal sales accounted for 15 months of activity, which CMS converted to 12-month equivalent.

Cell: E110
Comment: Rick Heede:
AngloAmerican plc Annual Report 1999, p.73, also shows 1998 production. Does not report on metallurgical coal production (unlike its 2002 AnnRpt).

Acquired one-third interest in Cerrajon (Colombia) from Rio Tinto at year-end 1999.

Cell: H110
Comment: Rick Heede:
AngloAmerican's annual reports are not clear about including (or not) metallurgical coal production for 1998-2000, unlike prior and later years. Hence CMS estimates 1999 and 2000 as equal to the ten-year prior average; 2000, however, since Anglo acquired Australian mining interests (which accounted for nearly 70 percent or 8.7 million tonnes of metallurgical production in 2001, is the average of 1999 and 2001.

Cell: D111
Comment: Rick Heede:
Acquired one-third interest in Cerrajon (Colombia) from Rio Tinto at year-end 1999.

Cell: E111
Comment: Rick Heede:
Anglo American (2001) Annual Report 2000, p. 62. (shows 1999 and 2000 only).

Cell: H113
Comment: Rick Heede:
AngloAmerican's 2001 annual report shows metallurgical coal production (8.7 Mt in Australian mines, plus 3.9 Mt in RSA). CMS (partial) annrpts for 1998-2000 does not disaggregate metallurgical (but not included, we surmise, in "trade" coal production). CMS estimates between 1997 and 2001 -- see note above.

Cell: E116
Comment: Rick Heede:
Production data for 1999-2004 from Anglo American plc (2001, 2003, and 2005) Annual Reports, Production Statistics. The reports for 2002 and 2004 show thermal coal production in Australia, South Africa,

and Colombia (owns 33 percent of Correjon), as well as metallurgical coal production in Australia and South Africa. Metallurgical coal production not shown in the 2000 report.

Cell: K117
Comment: Rick Heede (Feb10):
Anglo American provides no detailed coal production data for either thermal coal or coking coal in its Annual Rpt 2008. CMS uses the column chart (reproduced above) to guesstimate production for 2005-2008.

Cell: M120
Comment: Rick Heede (Feb10):
The Anglo 2008 Annual Rpt, page 160, shows 49.88 Bcf of proved CBM reserves plus 137.16 Bcf probable reserves. No production data is shown.

Cell: E121
Comment: Rick Heede:
Anglo American plc Annual Report 2010, page 197; thermal and metallurgical coal production in Australia, South Africa, Canada, and South America.

Cell: D123
Comment: Rick Heede:
Addendum 24Apr15: data in column "E" is for Australian production only. The data here (clmn D) adds attributable production from South African and Colombian operations. AnnRpt 2011 p. 66 and AnnRpt 2013 p. 67 (see tables page 3 of this worksheet).

Cell: E123
Comment: Rick Heede:
Anglo American 2013 Factbook, page 41, thermal and metallurgical coal production 2011-2013, in million tonns.

Cell: E126
Comment: Rick Heede:
Anglo American (2016) Factbook 2015 (xslx), worksheet on coal. We sum thermal coal production in Australia, Canada, Colombia, and South Africa in 2014 and 2015.

Cell: H126
Comment: Rick Heede:
Metallurgical coal production in Australia and Canada (Canadian assets sold).

Cell: K134
Comment: Rick Heede:
Since Anglo apparently started mining metallurgical coal in 1974, CMS applies the average metallurgical to thermal coal factor to 1974-2010 only; prior years are applied the thermal coal factor.