

Coal extraction data

Richard Heede
Climate Mitigation Services
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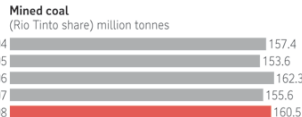
Rio Tinto, Australia

www.riotinto.com Melbourne

yellow column indicates original reported units

Production / Extraction data

Year	Thermal Coal		Coking Coal		Total Coal	
	Gross production Million tonnes/yr Kenecott 1993-04	Gross production Million tonnes/yr Rio Tinto	Gross production Million tonnes/yr	Gross production Million tonnes/yr Rio Tinto	Gross production Million tons/yr Rio Tinto	Gross production Million tonnes/yr Rio Tinto
1950						
1951						
1952						
1953						
1954						
1955						
1956						
1957						
1958						
1959						
1960						
1961						
1962						
1963						
1964						
1965						
1966						
1967						
1968						
1969						
1970						
1971						
1972						
1973						
1974						
1975	Key	9.87	2.53	0.95	14.4	13.0
1976	Key	11.02	2.54	1.00	15.7	14.2
1977	Key	10.88	2.55	1.05	15.6	14.1
1978	Key	10.36	2.56	1.09	15.1	13.7
1979	Key	14.86	2.57	1.14	20.1	18.2
1980	Key	15.33	2.58	1.19	20.7	18.8
1981	Key	18.55	3.04	1.23	24.7	22.4
1982	Key	13.88	3.24	1.28	19.8	18.0
1983	Key	13.43	3.40	1.33	19.5	17.7
1984	Key	14.82	3.40	1.37	21.1	19.2
1985	Key	18.87	4.25	1.42	26.5	24.0
1986	Key	21.05	12.60	1.47	38.7	35.1
1987	Key	22.54	14.30	1.51	42.3	38.4
1988	Key	21.59	16.00	1.56	43.2	39.2
1989	Key	22.23	18.89	1.61	47.1	42.7
1990	Key	26.04	23.72	2.19	57.3	51.9
1991	Key	26.04	25.72	2.19	59.5	53.9
1992	Key	29.47	9.02	2.67	45.4	41.2
1993	Key	32.90	10.59	2.95	51.2	46.4
1994	ton	36.60	27.10	1.98	72.4	65.7
1995		39.61	26.35	1.76	74.6	67.7
1996		40.94	26.93	1.54	76.5	69.4
1997		56.14	26.58	1.32	92.6	84.0
1998		84.14	28.44	1.10	125.3	113.7
1999		108.39	29.50	0.88	153.0	138.8
2000		101.03	28.75	1.73	145.0	131.5
2001		106.66	40.62	1.65	164.2	148.9
2002		105.32	41.91	1.93	164.4	149.2
2003		108.18	38.26	2.31	164.0	148.7
2004		117.73	32.94	6.76	173.5	157.4
2005					169.3	153.6
2006		125.26	31.16	5.91	178.9	162.3
2007		125.08	24.39	6.18	171.6	155.7
2008		130.76	22.36	7.43	177.0	160.5
2009			129.74	10.35		140.1
2010			60.71	12.04		72.8
Total		1,640	809	-	103	2,738
						2,697



Oil & Gas
Rio Tinto oil prod'n
million bbl per yr
2.206
2.026

Oil & gas prod'n not reported after 1960

NERCO
million tons
10.88
12.15
11.99
11.41
16.38
16.90
20.45
15.30
14.80
16.34
20.81
23.20
24.84
23.80
24.50
28.70
28.70
41.2
46.4
65.7
67.7
69.4
84.0
113.7
138.8
148.9
149.2
148.7
157.4
153.6
162.3
155.7
160.5
140.1
72.8

MINERALS (MMB tonnes) (2)
Rio Tinto Minerals - Western (200)
Rio Tinto Minerals - Trossachs (Argentina)
Rio Tinto total
OSM - hard coking (MMB tonnes)
Rio Tinto East Australia
Hard Creek Coal (Australia)
Mount Thorey (Australia)
Woolnorth (Australia)
Rio Tinto total hard coking coal
OSM - semi soft coking (MMB tonnes) (2)
Rio Tinto East Australia
Mount Thorey (Australia)
Woolnorth (Australia)
Rio Tinto total semi soft coking coal
OSM - thermal (MMB tonnes) (2)
Bergella (Australia)
Black Hill (Australia)
Clarendon (Australia) (2)
Harbour Valley (Australia)
Koolah Creek (Australia)
Mount Thorey (Australia)
Range Creek (Australia) (2)
Woolnorth (Australia)
Rio Tinto total thermal coal
US Coal
Antelope (US) (2)
Colony (US) (2)
Corliss (US) (2)
Decker (US) (2)
Janice Branch (US) (2)
Spring Creek (US) (2)
Total US thermal coal
Rio Tinto total thermal coal
OSM (tonnes) (MMB tonnes)
100.00%

1994-2010	1,286	616	65	1,966	million tonnes	
1994-2010 subtotal:						
Coal Types:	Subbituminous	65.39%	Bituminous	31.31%	coking coal	3.30%

Cell: D11**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: E24**Comment:** Rick Heede:

RTZ coal production data is inconsistent to completely lacking in its annual reports from 1960 to 1993; with better reporting 1994-2004. The uncertainty is highest during years with lower production levels, and the annual reports 1968-1979 provide no production tonnage data whatsoever.

Steam coal production is separated from coking coal production.

Units in million tons per year 1961-1985, million tonnes 1986-2004. Kennecott production (column D) is also converted to tonnes. While RTZ includes Kennecott production after the US properties were acquired in 1993, CMS only reports on the company's Australian and Indonesian production 1993-2004 in column E.

Cell: M26**Comment:** Rick Heede:

Rio Tinto Annual Report 1960, shows oil production in California (Kern Oil California) of 998k bbls, plus Kern Trinidad production of 1.028 million bbl; also shows 1959 production.

Cell: E28**Comment:** Rick Heede:

Rio Tinto Company annual report 1961, p. 14, reports that "Rio Tinto Australia formed Rio Tinto Collieries Pty" in 1961, chiefly in the Burragarang Valley west of Sydney producing approximately 650,000 tons of coking coal," plus unreported production from two smaller collieries producing steam coal. Rio Tinto's 1962 annual report, p.25, is not clear about total mined coal quantities, coke vs steam coal, or Rio Tinto's equity production vs total mined quantities. With these reporting ambiguities in mind:

CMS assumes, for 1962, that Rio Tinto's coke in 1962 is Illawarra's 111,000 tonnes of coke plus 700,000 of total Port Kembla's 798,000 tonnes is coke (up from the reported 650,000 tons in 1961). Rio Tinto Collieries is assumed to be steam coal: 833,000 tons, plus the remainder of Kembla's production (798,000 minus the 650,000 tons of coke = 148,000 tons); total steam coal = 0.148 plus 0.833 million tons.

CMS assumes, for 1961, that Rio Tinto's coke production: is Illawarra's 100,000 tonnes of coke plus 650,000 tonnes of total Port Kembla's production of 735,000 tonnes is coke (1961 AnnRpt). Rio Tinto Collieries is assumed to be steam coal: 833,000 tons, plus the remainder of Kembla's production (735,000 minus the 650,000 tons of coke = 85,000 tons); total steam coal = 0.100 plus 0.833 million tons.

Cell: H28**Comment:** Rick Heede:

Rio Tinto's 1962 annual report, p.25, is not clear about total mined coal quantities, coke vs steam coal, or Rio Tinto's equity production vs total mined quantities. With these reporting ambiguities in mind:

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Cell: M29**Comment:** Rick Heede:

Mention of oil production regions and profitability is discussed, but no quantitative data is reported.

Cell: E30**Comment:** Rick Heede:

Steam and Coke production for 1963 and 1964 from Rio Tinto-Zinc Corporation Annual Report 1964.

Cell: H30**Comment:** Rick Heede:

Rio Tinto annual report 1963 now shows most production at Kembla is steam coal and the minor fraction (108,000 vs 778,000 tons) as coking coal, a shift from the 1961 report ("producing 650,000 tons a year of coking coal"). Regardless of this change in reporting, or change in type of coal produced, CMS lists the reported quantities, ie, 108,000 tons of coke.

Cell: E31**Comment:** Rick Heede:

Steam and Coke production for 1963 and 1964 from Rio Tinto-Zinc Corporation Annual Report 1964.

Cell: E34**Comment:** Rick Heede:

Rio Tinto-Zinc Corporation (1967) Annual Report, p. 43, shows no quantitative production data, but does report "a substantial increase over 1966. CMS has not been able to report actual production of steam coal since the 1964, and interprets "substantial increase" to mean 10 percent per year 1965 and 1966 and 1967.

Cell: H34**Comment:** Rick Heede:

Rio Tinto-Zinc Corporation (1967) Annual Report, p. 43. "A new contract for Japanese steel mills was concluded for the supply of approx 650 thousand tons of coal per annum for five years from April 1968." CMS adds previous quantity of coking coal production (115,000 tons in 1965), since this is new contract.

Cell: E48**Comment:** Rick Heede:

Rio Tinto 1981 annual report shows Kembla Coal and Coke Pty production of 2.964 million tons, plus 75,226 tons at Blair Athol Coal Pty, plus pre-production construction at Tarong, QLD. No mention of coke production at Kembla or Broken Hill Smelters.

Cell: E49**Comment:** Rick Heede:

RTZ Annual Report 1982 shows 3.1 Mt at Kembla Coal and 136,439 tonnes at Tarong and Blair Athol Coal (under construction, scheduled for first shipment in Apr84).

Cell: E50**Comment:** Rick Heede:

RTZ 1983 annual report (partial copy covering "Coal and Coke" (p.43) but neglecting to give production data; instead, "production of coking coal was lower ..., whilst production of steaming coal was higher than in 1982." CMS assumes 5 percent higher production than in 1982.

Cell: E51

Comment: Rick Heede:

RTZ annual report 1984 gives no data; due to weak market, Kembla production "production of coking coal was 11 per cent lower in 1984 than in 1983" (p. 16). Also, "production of steaming coal increased from Queensland operations of Blair Athol and Tarong." CMS thus assumes overall 1984 same as 1983.

Cell: E52

Comment: Rick Heede:

RTZ annual report 1984, p. 21, gives no production data; "Kembla Coal & Coke kept its output, which is mainly coking coal, at the lower levels set in 1984, giving a drop of 8 per cent in run of mine output." Sales increased 64 percent due to lifting of export restrictions allowed the sale of stockpiles to India and the UK. "CRA's steam coal operations also achieved good profits, ... two more generating sets at Tarong ... production increased accordingly." "Blair Athol raised output by 83 per cent ... to markets in Asia." In lieu of published data by RTZ, CMS assumes coal output increased by 25 percent over 1984.

Cell: E53

Comment: Rick Heede:

RTZ annual report 1988, p. 15, shows partial production data for Kembla ("profitability ... increased sales ... industry-wide disputes"); Blair Athol (increased 20 per cent to 6.3 million tonnes ... to produce 8 million tonnes per annum by 1991); CRA "is to proceed with the development of the 7 million tonne a year Kaltim Prima coal mine in East Kalimantan, Indonesia. CRA is manager of this joint venture. ... reserves in excess of 360 million tonnes); in British Columbia Rio Algom's Bullmoose mine ("increased earnings, ... shipments .. same level"); in Zimbabwe (initially "only small tonnages will be produced"). CMS thus assumes, lacking production data from RTZ, that company-wide production of steam coal is twice the reported production at Blair Athol (6.3 * 2) million tonnes. CMS also assumes Kembla production of coking coal

Cell: J53

Comment: Rick Heede:

It is not clear from RTZ's annual reports -- since tonnage is rarely reported -- when the company changed from reporting "tons" to "tonnes." The 1986 report is the first mention of "tonnes," and CMS changes its conversion formula accordingly.

Cell: E55

Comment: Rick Heede:

Rio Tinto annual report, p. 18: "In November 1989 CRA bought BP's major coal assets, .. Include production of 4.5 million tonnes. This acquisition increases CRA's annual coal production to over 20 million tonnes. CMS thus assumes 1989 production at 20.5 million, and 1988 production at 4.5 million tonnes less. First reported use of metric "tonnes" as opposed to "tons." CMS adjusts its conversion.

Cell: H56

Comment: Rick Heede:

See cell note at E59 (RTZ steam coal, 1990).

Cell: E57

Comment: Rick Heede:

RTZ Corporation annual report 1990, p.18, shows a curiously incomplete list of coal mines (excluding substantial production from its West Cliff, Tahmoor, Western Main, and Vic key mines). CMS ignores reported production of 7.81 million tonnes, since 1989 total production was "over 20 million tonnes." CMS does use the reported coking coal production, even this total also excludes any coking coal production from the same excluded mines; see column H. As for steam coal production, CMS assumes the total reported production in 1989 less 1990 coking coal production, plus 5 percent gain to reflect RTZ's "production and sales improved at CRA's Australian coal mines, ... increased sales to Japan and elsewhere in Asia."

Cell: E58

Comment: Rick Heede:

RTZ annual report 1991, p. 16, shows no production tonnage, but mentions "demand for steam coal strengthened during the year, ... demand for metallurgical coal held up well ... CRA maintained overall coal production at a similar level to that in 1990." "The Kaltim Prima coal mine in Indonesia. Almost 2 million tonnes were shipped in 1991. The mine is scheduled to come rapidly into full production with 6.5 million tonnes planned in 1992 and the 7 million tonne design capacity to be achieved the following year."

For 1991, CMS thus assumes coke and steam coal production at the same level as 1990, but adding 2 million tonnes to account for the new mine in Indonesia.

Ditto for 1992, but adding 6.5 million tonnes of steam coal. Ditto for 1993, but adding 7.0 million tonnes.

Cell: E59

Comment: Rick Heede:

RTZ's 1993 annual report refers to "RTZ's coal production rose from 12 million tonnes in 1992 to 37 million tonnes in 1993. Of this 23 million tonnes came from US acquisitions." Note: CMS lists Kennecott production in Column D, and thus excludes US production from column E. CMS cannot resolve the conflicting data between its operating data that excludes several mines acquired in 1989 from BP, stated CRA coal 1991 production as "over 20 million tonnes" and now, without referring to the sale of coal properties, non-US coal production rising from "12 million tonnes in 1992."

That said, CMS elects to report "RTS's net share of production" (p. 19) -- even this list ignores production from several mines acquired from BP in 1989 -- which totals 11.685 million tonnes in 1992 and 13.536 million tonnes in 1993. Of this total in 1992, 2.666 Mt was coking coal, and 9.019 Mt steam coal. In 1993, steam coal totaled 10.589 Mt and 2.947 Mt of coking coal. In both years CMS allocates one-third of "Coal & Allied" steam and coking coal as coking and two-thirds as steam coal.

RTZ may clear up this confusing picture with additional data. Note that very few production data have been provided in the company's annual reports since the first acquisition of its coal mining operations in 1961.

Cell: D61

Comment: Rick Heede:

Rio Tinto Annual report for 1998, p. 40: "Rio Tinto became a US coal producer in 1993 through the acquisition of three mines from Nerco Inc. and Cordero Mine from Cordero Mining Company. Nerco and Cordero were renamed the Kennecott Energy and Coal Company." Rio Tinto also has a partnership interest in Colowyo Coal Company and Fort Union. The Company also acquired the Jacobs Ranch coal mine in 1998 (purchased from Kerr-McGee for \$400 million). Rio Tinto's share of the coal production totalled 84.1 million tonnes in 1998.

Rio Tinto AnnRpt, p. 88, shows US, Australian, and Indonesian coal production for 1994-1998, in million tonnes per year.

Cell: E61

Comment: Rick Heede:

Rio Tinto Annual report for 1998 does not specify type of coal mined or type of customer.

Cell: D66

Comment: Rick Heede:

Steam coal production (US operations only) 1999-2003 from Rio Tinto (2004) Databook, p. 30. In million tonnes.

Cell: E66

Comment: Rick Heede:

Steam coal (non-US only) production 1999-2003 from Rio Tinto (2004) Databook, p. 26.

Cell: H66

Comment: Rick Heede:

Coking coal production 1999-2003 from Rio Tinto (2004) Databook, p. 26.

Cell: E71

Comment: Rick Heede:

Rio Tinto hard coking coal (6.76 million tonnes) and "other coal" (32.943 million tonnes) (assumed to be all thermal) produced in Australia, plus Kennecott production (117.734 million tonnes) from Rio Tinto (2005) Production Report for First Quarter 2005, p.8.

Cell: F72

Comment: Rick Heede:

CMS was unable to view archived annual reports (prior to 2008). 2005 total coal production shown in a bar chart.

Cell: G73

Comment: Rick Heede (Feb10):

Rio Tinto Annual Report 2008, page 108-109. Production data disaggregated into "Coal - Hard Coking" mined in Australia (in this worksheet's column "H"), "Coal - Other" (defined as thermal coal and semi-soft coking coal, also Australian, in column "E"), and "Rio Tinto Energy America" (presumably all or chiefly western subbituminous coal, in column "D"). All data in million tonnes.

Cell: K76

Comment: Rick Heede:

AR 2010 online, 2006-2008 values consistent between this table and online report. Report's section "Metals and minerals production" details coal production by hard and soft coking coals (Australia), thermal coal (Australia and US); see our columns for thermal and coking coal production for details.

Cell: H82

Comment: Rick Heede:

CMS uses the more reliable data from 1994 to 2008 for estimating production by coal type. Australian coking coal is assumed to have a carbon and hetign value content of anthracite, Australian thermal coal is assumed to be ranked as bituminous coal, and the Rio Tinto mines in the US are all assumed to be western subbituminous.