

South America Mineral Production



1997–2006



**British
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NATIONAL ENVIRONMENT RESEARCH COUNCIL

BRITISH GEOLOGICAL SURVEY

South America Mineral Production 1997–2006

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Front cover

A truck hauling ore at the Lomas Bayas open pit mine in Chile
(reproduced by kind permission of Xstrata)

Lomas Bayas is a porphyry copper deposit located in northern Chile's Second Region. The mine is situated in the Atacama Desert, at an altitude of 1 500 metres, approximately 120 kilometres from the port of Antofagasta. The Lomas Bayas operation consists of an open pit copper mine and solvent extraction-electrowinning (SX-EW) plant. Lomas Bayas annually produces 65 000 tonnes of copper cathode. In 2007 an expansion to 75 000 tonnes per annum of copper cathode was approved and is due to for completion in the second half of 2008.

CONTENTS

Country Index

Argentina	2
Bolivia	3
Brazil	4
Chile	6
Colombia	7
Ecuador	8
French Guiana	8
Guyana	8
Paraguay	9
Peru	9
Suriname	10
Uruguay	10
Venezuela	11

EXPLANATORY NOTES

The statistics in this publication are from a more comprehensive database that is published as the *World Mineral Production* series.

Coverage

South America Mineral Production covers the majority of economically important mineral commodities. For each commodity constant efforts are made to ensure that as many producing countries as possible are reported. For some commodities, where statistics on production are not publicly available, estimates are made. Users of this compilation are advised that more statistical information than can be included in a publication of this nature is held in the BGS files and is available for consultation.

Metals

Mine production of many metals is expressed in terms of metal content. This is clearly indicated adjacent to the commodity description. Unless otherwise specified, metal production statistics relate to metal recovered from both domestic or imported materials, whether primary or secondary, but exclude remelted material.

Exclusion of Warranty

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Acknowledgements

Compilation of this volume of mineral statistics has been possible only by obtaining information from a very large number of organisations throughout the world, chiefly government departments and specialist national or international authorities concerned with particular sectors of the minerals or metals industries. To all these bodies the British Geological Survey expresses its grateful acknowledgement for the information made available, whether in published form or provided by direct correspondence.

Particular acknowledgement is made to the Mines Departments and other government agencies of many countries whose regular statements, yearbooks and other reports including *Sumário Mineral Brasileiro*; *Anuario de la Minería de Chile*; *Anuario de Estadísticas del Cobre y Otros Minerales*; *Memorias al Congreso Nacional*, Colombia are worthy of direct consultations by readers in search of detail.

Specialist commodity organisations which have kindly allowed information to be reproduced include the International Copper Study Group, the International Lead and Zinc Study Group, the International Nickel Study Group and the International Fertilizer Industry Association Ltd. In a few instances, information on specific commodities has been obtained directly from company sources. The co-operation of other members of the International Consultative Group on Non-Ferrous Metal Statistics is also gratefully acknowledged.

Supplementary information is also obtained from publications dealing with a wide range of commodities such as Mining Journal, *Mining Annual Review*; World Bureau of Metal Statistics, *World Metal Statistics* and *Metallstatistik*; publications of the United States Geological Survey, UN Agencies and BP *Statistical Review of World Energy*.

In addition, information has been obtained from the websites of the following organisations: United Nations; International Iron and Steel Institute; World Nuclear Association; International Fertilizer Association; Instituto Latinoamericano del Fierro y el Acero; Instituto Argentino de Siderurgia; Instituto Argentino del Petróleo y del Gas; Dirección Nacional de Minería, Argentina; Aluar Aluminio Argentino; Instituto Nacional de Estadística, Bolivia; Departamento Nacional de Produção Mineral, Brazil; Agência Nacional do Petróleo, Brazil; Paranapanema S.A., Brazil; Associação Brasileira de Produtores de Ferroligas e de Silício Metálico; Brazilian Aluminum Association; Servicio Nacional de Geología y Minería, Chile; Comisión Chilena del Cobre; Ministerio de Minas y Energía, Colombia; IFI – Concesión de Salinas, Colombia; Ministerio de Minas y Petróleos, Ecuador; Banco Central del Ecuador; Bank of Guyana; Ministerio de Energía y Minas Repùblic del Perú; Sociedad Nacional de Minería, Petróleo y Energía, Peru; US Energy Information Administration; Bauxite Institute Suriname; Staatsolie Maatschappij Suriname; Cambior Inc.; Dirección Nacional de Minería y Geología, Uruguay; Anglo American.

Units

The Statistics are expressed in metric units. The following factors are given for converting to non-metric units:

tonnes $\times 0.9842$ = long tons

tonnes $\times 1.1023$ = short tons

kilograms $\times 2.2046$ = pounds

kilograms $\times 32.1507$ = troy ounces

cubic metres $\times 35.3147$ = cubic feet

1 tonne of crude petroleum equals on average 7 barrels of crude petroleum.

1 flask mercury = 34.5 kilograms

1 metric ton unit = 10 kilograms

Conversion of national currencies to pounds sterling has been made using the annual average factors shown for each country in *International Financial Statistics* published by the International Monetary Fund.

Symbols

...	figures not available
0	quantity less than half unit shown
—	nil
*	estimated
BGS	British Geological Survey

TABLE NOTES

Bauxite

(1) Includes production of refractory bauxite

Alumina

(1) Where possible figures show the alumina equivalent (Al_2O_3) of total hydrate produced, whether or not calcined

Antimony, mine

(1) Includes antimony content of antimonial lead alloys

White arsenic

(1) Includes calculated trioxide equivalent of arsenic metal produced except where this would involve double counting

Barytes

(1) Statistics may include small quantities of witherite

Bentonite and fuller's earth

(1) Bentonites consist of montmorillonite (one of the smectite group of clay minerals) and occur in two main varieties, calcium bentonite, the most commonly occurring, and sodium bentonite, industrially the more important
(2) Calcium bentonite can be converted to sodium bentonite by a sodium-exchange process
(3) In some countries calcium bentonite is known as fuller's earth, a term which is also used to refer attapulgite, a mineralogically distinct clay mineral but exhibiting similar properties

Bismuth, mine

(1) The figures are in some instances derived from reported bismuth content of refined and impure metal plus recoverable in ores and concentrates exported
(2) Production for some countries may include bismuth produced from imported ores but it is thought that any resulting duplication is insignificant in the countries shown

Cadmium

(1) Data exclude secondary metal unless otherwise stated

Coal

(1) There is no international agreement as to the separate definition of lignite and brown coal. In some cases they are distinguished. Elsewhere both may be aggregated under one or other term

Cobalt, mine

(1) There is frequently a considerable disparity between the cobalt content of ore raised and cobalt actually recovered
(2) Figures relate where possible to cobalt recovered

Copper, smelter

(1) Figures show primary metal in the form of blister and anode produced from concentrates, and may include copper produced from scrap but this is excluded when it can be separately identified

Copper, refined

(1) Figures relate to both primary and secondary refined copper, whether electrolytic or fire refined. Metal recovered from secondary materials by remelting alone is excluded

Diamond

(1) Production of synthetic diamond is not included
(2) So far as possible the amounts shown include estimates for illegal production

Gold, mine

(1) In several countries substantial amounts of gold produced in small operations are not recorded in the official statistics used when compiling these tables

Graphite

(1) Includes all forms of amorphous and crystalline graphite but excludes synthetic material

Gypsum

(1) Some countries produce large quantities of synthetic gypsum. Where possible, this output is excluded

Pig iron

(1) The data include sponge iron and direct reduced iron (DRI), where these have been separately identified

Crude steel

(1) Unless otherwise indicated, these figures include production from scrap

Lead, refined

(1) Figures relate to both primary and secondary refined lead and include the lead content of antimonial lead. Metal recovered from materials by remelting alone is excluded

Mercury

(1) Several countries are believed to have unrecorded production of mercury from copper electrowinning processes

Nickel, smelter/refinery

(1) Data relate to refined nickel plus the nickel content of ferro-nickel, nickel oxide and nickel salts

Crude petroleum

(1) The figures include natural gas liquids

Natural gas

(1) So far as possible the figures exclude flared or reinjected gas

Platinum group metals, mine

(1) Wherever possible, figures relate to quantities of platinum group metals thought to be recovered from ores originating in the country stated
(2) Figures for metal production are only given for countries where recovery is thought to be based predominantly on domestic materials or on imported materials which have not been recorded as mine production elsewhere

Rare earth minerals

(1) Figures refer to gross tonnage of concentrates

Salt

(1) Production of refined salt is not included
(2) Salt is known to be produced in many countries for which statistics are not available

Sillimanite minerals

(1) A number of other countries produce sillimanite minerals but details of output are not reported

Tantalum and niobium minerals

(1) The figures refer to gross tonnage of tantalum and niobium concentrates
(2) Niobium and tantalum are also recovered from tin slags. This source is particularly important in the case of tantalum and in recent years is believed to have accounted for over 60% of all tantalum recovered

Tin, smelter

(1) The figures relate to both primary and secondary metal
(2) Many countries produce small amounts of secondary metal

Titanium minerals

(1) The figures refer to gross tonnage of titanium concentrates

Vanadium

(1) Includes vanadium in slag products but excludes vanadium recovered as a byproduct of the refining and burning of heavy oils

Zirconium minerals

(1) The term 'zirconium minerals' is understood to mean zircon, unless otherwise stated

South America

The world's fourth largest continent extends over 7400 km from north to south and with a maximum width of 5160 km. The South American mainland is made up of thirteen countries including French Guiana, an overseas department of France. The population of South America has more than doubled over the last forty years and the continent has one of the highest rates of urbanisation in the world. South America is a major trading partner, in particular with North America, Western Europe and Japan.

The geological diversity of South America ensures the continent is relatively rich in mineral wealth, with some of the world's largest deposits of copper, bauxite, iron ore and nickel. The copper endowment of Chile is particularly notable, accounting for 35 per cent of global copper production. South America makes a significant contribution to world production

of the following commodities: copper (45 per cent), molybdenum (32 per cent), silver (29 per cent), tin (20 per cent), iron ore (19 per cent), bauxite (18 per cent), gold (16 per cent), zinc (15 per cent), nickel (13 per cent) and lead (10 per cent). In addition it is an important petroleum producer, accounting for around nine per cent of world production. However, few countries in South America possess significant resources of metallic and energy minerals, and Uruguay and Paraguay are notably deficient in both. Latin America has been the leading region for world exploration expenditure for more than a decade, accounting for 24 per cent of worldwide non-ferrous metals exploration budgets in 2006. Peru and Brazil attract the most exploration expenditure in South America, accounting for four and five per cent of worldwide exploration expenditure in 2006, respectively (Metal Economics Group, 2007, www.metalseconomics.com).

STATISTICAL TABLES

Argentina

The second largest country in South America is rich in natural resources. Minerals have made an increasingly important contribution to GDP in recent years. Argentina is South America's second largest gold producer after Peru, accounting for 11.6 per cent of regional production. Argentina is also becoming an important copper producer, generating 2.7 per cent of the continent's copper, with a number of significant gold and copper projects under development. Argentina's historical mineral

production has been dominated by industrial minerals. It is the world's third largest producer of borates and an important producer of lithium. Argentina has a significant hydrocarbons industry, being the largest natural gas producer in South America and the third biggest petroleum producer, accounting for 43 and 10 per cent of the continent's production of each of these commodities, respectively.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Primary aluminium	tonnes	186 330	186 605	204 600	263 870	243 840	267 776	273 524	273 575	275 071	268 805
Asbestos	tonnes	301	309	259	254	203	155	166	267	260	299
Barytes	tonnes	13 121	1 833	4 365	5 472	6 955	3 048	6 934	2 762	3 355	6 276
Bentonite and fuller's earth	tonnes	113 572	131 320	128 809	125 686	135 450	120 006	146 845	163 028	247 101	256 165
Bentonite	tonnes	*1 500	*1 500	*1 500	*1 500	*1 500	*1 500	*1 500	*1 500	*1 500	*1 500
Fuller's earth	tonnes	422 556	279 272	565 647	512 624	633 520	515 555	512 167	821 031	632 792	533 535
Borates	tonnes	45	34	—	—	34	25	39	39	56	*50
Cadmium	tonnes	—	—	—	—	—	—	—	—	—	—
Coal	tonnes	250 136	218 270	353 839	246 000	149 851	56 324	117 832	120 060	320 000	295 333
Bituminous	tonnes (metal content)	30 421	170 273	210 126	145 197	191 667	204 027	199 020	177 143	187 317	180 144
Copper, mine	tonnes	*16 000	*16 000	*16 000	*16 000	*16 000	*16 000	*16 000	*16 000	*16 000	*16 000
Copper, refined	tonnes	9 449	25 430	34 056	17 663	17 090	23 314	35 518	8 180	34 045	38 543
Diatomite	tonnes	105 320	42 468	62 926	59 466	48 522	82 642	90 857	125 684	151 307	170 728
Feldspar	tonnes	7 168	11 517	12 704	11 229	9 075	5 168	6 189	7 502	8 278	—
Fluorspar	tonnes	2 289	20 400	38 515	25 954	30 630	32 530	29 748	28 496	27 904	44 131
Gold	kilograms (metal content)	729 495	650 356	571 344	559 277	371 527	362 556	387 936	674 935	1 073 286	1 201 812
Gypsum	tonnes	3 659 744	2 974 208	3 602 566	3 192 800	3 649 700	4 138 600	4 147 500	4 466 500	4 426 000	5 533 000
Fig iron	tonnes	3 576 039	3 659 744	3 805 205	4 479 204	4 112 501	4 363 367	5 033 200	5 125 200	5 382 000	—
Crude steel	tonnes	4 168 500	4 215 890	—	—	—	—	—	—	—	—
Ferro-alloys	tonnes	7 672	5 000	*2 000	—	—	—	—	—	—	—
Ferro-manganese	tonnes	25 000	25 000	*10 000	4 900	5 150	*5 000	*5 000	*5 000	*5 000	*5 000
Ferro-silico-manganese	tonnes	19 265	11 000	2 600	2 500	2 740	2 700	2 700	2 700	2 700	2 700
Ferro-silicon	tonnes	20 400	23 000	13 900	16 900	9 925	17 289	*15 000	*15 000	*15 000	*15 000
Other ferro-alloys	tonnes	...	7 000	*8 000	*8 000	*8 000	*8 000	*8 000	*8 000	*8 000	*8 000
Silicon metal	tonnes	47 365	46 832	52 665	34 023	13 584	13 865	19 219	39 072	54 903	49 619
Kaolin	tonnes (metal content)	13 760	15 004	14 256	14 115	12 334	12 011	12 079	9 551	10 683	12 778
Lead, mine	tonnes	32 116	30 357	25 965	35 700	35 433	43 600	41 311	49 111	45 607	49 064
Lead, refined	tonnes	1 876	8 583	4 387	7 343	4 512	5 635	7 550	11 273	15 700	16 500
Lithium minerals (a) (b)	tonnes	...	43 509	37 773	35 242	29 956	—	—	—	—	—
Magnesite	tonnes	3 528	3 480	3 097	4 665	2 110	1 894	2 518	4 101	6 223	—
Mica	tonnes	27 578	21 495	21 008	17 521	17 916	17 152	21 480	21 193	25 146	—
Perlite	tonnes	44 174 851	44 834 345	42 423 518	40 984 335	41 445 316	40 242 083	39 307 638	35 910 829	34 117 773	33 806 223
Crude petroleum	million m ³	30 319	32 832	37 616	41 229	40 813	40 311	50 633	52 385	51 573	51 778
Natural gas	million m ³	841 029	751 695	1 263 423	1 348 514	1 269 814	1 080 328	1 667 829	1 371 792	1 845 833	1 917 656
Salt	tonnes	52 550	35 768	73 785	78 271	152 802	125 878	133 907	172 400	263 766	248 227
Silver, mine	tonnes	3 049	2 416	2 141	4 656	3 655	2 595	4 300	6 727	7 233	19 822
Strontium minerals (c)	tonnes (sulphur content)	23 000	23 000	23 000	23 000	23 000	23 000	23 000	23 000	23 000	23 000
Sulphur and pyrites	tonnes	13 380	14 585	8 971	6 730	1 665	1 700	7 620	(e) 21 053	(e) 23 113	...
Recovered (d)	tonnes	4 242	3 450	3 400	3 877	2 155	4 525	12 594	—	—	—
Talc	tonnes	—	—	—	—	—	—	—	—	—	—
Pyrophyllite	tonnes	—	—	—	—	—	—	—	—	—	—

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Uranium	tonnes (metal content)	35	8	*2 800	***	1 110	1 105	1 124	1 293	1 403	—
Vermiculite	tonnes	822	903	34 858	39 703	37 325	29 839	27 220	30 227	29 808	1 585
Zinc, mine	tonnes (metal content)	33 357	35 560	34 192	42 907	41 797	42 360	38 298	40 457	45 991	—
Slab zinc	tonnes	41 772	41 777	43 443	39 269	—	—	—	—	—	—

Note(s):-

- (a) Carbonate
- (b) Chloride
- (c) May contain unbeneficiated material
- (d) From metal sulphide processing
- (e) Including talc, agalmatolite and pyrophyllite

Bolivia

The mining sector is a major source of export income for Bolivia which is the world's fourth largest producer of tin, accounting for 5.5 per cent of world production. Bolivia is a major regional zinc producer, contributing 10.6 per cent to the continent's production. Bolivia is the third largest silver producer in South America and also has notable gold production. It is the world's second largest producer of tungsten, bismuth, lead antimony, despite producing only 3.1 per cent and is a significant producer of tungsten, bismuth, lead

and borates. Bolivia has extensive reserves of natural gas and is the third largest producer in South America, accounting for 12.1 per cent of the continent's production. Recent political changes have brought considerable uncertainty to Bolivia's mining sector with concerns over nationalisation and taxation changes.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Antimony, mine	tonnes (metal content)	5 999	4 735	2 790	1 907	2 072	2 343	2 432	3 036	5 204	5 460
White arsenic	tonnes	282	284	437	318	846	237	276	168	120	120
Barytes	tonnes	4 402	2 500	6 005	3 050	6 253	15 556	1 851	5 774	11 379	8 943
Bismuth, mine	tonnes (metal content)	...	...	...	...	...	...	20	72	62	44
Borates	tonnes	12 469	15 930	15 362	41 021	32 477	40 479	109 545	68 031	63 499	50 727
Gold, mine	kilograms (metal content)	13 292	14 444	11 786	12 000	12 374	11 269	9 361	6 165	8 871	9 628
Lead, mine	tonnes (metal content)	18 608	13 848	10 153	9 523	9 090	9 268	9 353	10 252	11 231	11 955
Crude petroleum	tonnes	1 398 500	1 602 357	1 355 157	1 282 403	1 449 570	1 438 604	1 551 000	1 891 000	1 957 000	1 888 000
Natural gas	million m ³	3 016	3 106	2 612	3 597	5 275	6 421	7 398	10 257	12 536	14 434
Silver, mine	kilograms (metal content)	387 200	403 961	422 540	433 590	409 720	460 900	466 300	412 550	420 300	472 210
Tin, mine	tonnes (metal content)	12 898	11 308	12 417	12 503	12 039	13 210	16 386	18 115	18 639	17 669
Tin, smelter (a)	tonnes (metal content)	16 853	11 102	11 166	9 353	11 292	10 976	12 836	13 627	13 841	*13 500
Tungsten, mine	tonnes (metal content)	513	497	334	393	532	376	441	403	530	870
Zinc, mine	tonnes (metal content)	154 491	152 110	146 144	149 134	141 983	141 708	145 490	147 430	159 502	172 747

Note(s):-

- (a) Refined, including alloys

Brazil

As the world's fifth largest country Brazil is the leading economy in South America and a principal global producer of a number of mineral commodities. It is the world's largest producer of tantalum and niobium minerals. Brazil is the world's second largest producer of bauxite, alumina, iron ore (Brazil's most important mineral export) and rare earth minerals. Brazil produces 11.9 per cent of world bauxite, 9.3 per cent of alumina and 17.6 per cent of iron ore. It is the world's third largest producer of graphite

(3.8 per cent of world production) and kaolin (9.8 per cent world production). Brazil is the world's fourth largest producer of manganese (10.0 per cent of global production) and has significant chromium, copper, gold, aluminium, nickel and zirconium production. Brazil has extensive oil reserves, ranking as the second largest producer in South America and accounting for 2.4 per cent of global production.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bauxite (a)	tonnes	11 539 965	11 566 798	12 661 746	13 974 480	13 388 100	13 147 900	18 456 800	20 511 800	22 034 600	22 836 300
Alumina	tonnes (Al_2O_3 content)	3 088 000	3 322 100	3 515 100	3 754 100	3 519 700	3 855 400	4 713 800	5 126 500	5 201 100	6 720 200
Primary aluminium	tonnes	1 189 100	1 208 000	1 249 600	1 271 400	1 132 000	1 318 400	1 380 600	1 457 400	1 497 600	1 604 500
Asbestos	tonnes	208 447	198 332	188 386	209 332	172 685	194 732	231 115	252 067	236 047	227 304
Barytes (b)	tonnes	43 307	48 634	40 824	54 100	54 790	53 098	57 452	50 430	42 924	47 611
Bentonite and fuller's earth	tonnes										
Bentonite	tonnes	117 156	264 303	296 489	317 621	260 282	304 782	392 422	432 224	459 679	419 214
Beryl	tonnes	...	...	11	13	...	...	*4	*4	*4	*4
Cadmium	tonnes	*130	*130	*130	*135	*140	151	189	187	200	*200
Chromium ores and concentrates	tonnes	112 274	160 742	190 000	253 248	419 049	283 991	376 862	593 476	616 534	562 739
Coal	tonnes										
Bituminous & lignite (b)	tonnes (metal content)	5 542 000	5 084 357	6 062 963	6 797 294	5 645 578	5 143 488	4 643 319	5 408 278	6 048 105	6 215 258
Cobalt, mine	tonnes	1 500	2 500	2 900	4 100	4 400	4 400	4 200	4 300	*4 300	*4 300
Cobalt metal	tonnes	266	364	630	792	889	960	1 097	1 155	1 136	902
Copper, mine	tonnes (metal content)	39 952	34 446	31 371	31 786	32 734	32 711	26 275	103 153	133 325	147 836
Copper, smelter refined	tonnes	177 060	167 205	193 014	184 257	212 243	187 605	173 378	208 020	199 043	219 684
Copper, refined	tonnes	177 060	167 205	193 014	184 257	212 243	187 605	173 378	208 020	199 043	219 684
Diamond	carats	*100 000	100 349	*900 000	*1 000 000	*700 000	*500 000	*400 000	*300 000	*300 000	*200 000
Diatomite (b)	tonnes	14 215	13 557	9 223	10 164	10 010	5 835	6 920	7 200	7 670	8 968
Feldspar (b)	tonnes	79 399	145 783	150 492	227 215	139 644	97 742	102 077	280 283	196 419	166 418
Fluorspar (b)	tonnes	78 032	72 085	44 926	44 046	43 734	47 899	56 346	57 772	66 512	63 604
Gold, mine	kilograms (metal content)	52 335	46 031	51 422	50 393	42 884	41 662	40 416	47 595	48 293	40 075
Graphite (b)	tonnes	41 444	61 369	53 503	71 208	60 666	60 922	70 739	76 332	75 515	76 194
Gypsum (b)	tonnes	1 352 476	1 283 955	1 496 936	1 497 790	1 506 619	1 633 311	1 529 015	1 474 911	1 582 248	1 737 220
Iron ore (a)	tonnes	184 924 580	199 233 506	194 485 974	210 000 000	214 560 000	234 478 000	261 696 128	281 462 088	317 800 229	32 452 000
Pig iron	tonnes	25 336 000	25 446 800	24 948 500	28 135 000	27 731 000	30 05 000	32 449 000	34 558 000	33 884 000	30 901 000
Crude steel	tonnes	26 152 900	25 759 900	24 996 200	27 865 000	26 717 000	29 604 000	31 147 000	32 909 000	31 610 000	30 901 000
Ferro-alloys	tonnes										
Ferro-chrome	tonnes	67 429	65 683	78 874	134 562	84 428	123 175	171 257	177 276	154 874	130 992
Ferro-silico-chrome	tonnes	7 056	6 824	11 910	7 790	5 899	10 522	8 151	11 560	15 429	8 221
Ferro-silico-magnesium	tonnes	14 076	7 717	9 682	9 658	11 032	14 552	14 040	37 031	43 980	31 314
Ferro-manganese	tonnes	152 530	137 549	85 260	121 277	96 016	156 435	176 735	179 971	*185 000	198 753
Ferro-silico-manganese	tonnes	175 919	124 458	148 384	171 304	180 245	182 731	261 658	285 629	341 565	341 565
Ferro-nickel	tonnes	32 015	26 389	19 807	19 315	17 986	19 874	19 378	20 338	21 200	27 600
Ferro-niobium	tonnes	25 475	30 973	28 557	27 359	37 411	36 450	37 303	35 863	58 616	60 826
Ferro-silicon	tonnes	212 183	166 278	200 833	189 935	159 345	145 910	156 824	177 245	177 000	128 000
Other ferro-alloys	tonnes	1 046	1 170	35 190	35 190	25 300	38 559	45 868	42 588	44 280	
Silicon metal	tonnes	136 884	126 744	136 572	166 344	112 123	133 390	180 937	219 813	187 950	186 000
Kaolin	tonnes (metal content)	(b) 1 348 562	(b) 1 499 381	(b) 1 652 997	(c) 1 639 673	(c) 1 817 419	(c) 1 757 488	(c) 2 081 000	(c) 2 410 000	(c) 2 455 000	
Lead, mine	tonnes	8 729	7 567	10 281	8 832	10 725	9 253	10 652	14 737	16 063	16 007
Lead, refined (d)	tonnes	44 500	48 000	52 000	50 000	47 000	50 000	128 610	137 121	104 904	142 653
Lithium minerals	tonnes										

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Petalite	tonnes	386	260	442	1 077	187	..	9 755	9 064	..	..
Spodumene	tonnes	6 499	9 035	10 629	9 796	8 897	12 046	306 444	366 174	8 924	8 585
Magnesite (b)	tonnes	294 629	342 485	282 145	279 876	308 809	302 230	3 000	3 000	386 759	323 902
Primary magnesium metal	tonnes	*9 000	*9 000	7 968	5 723	5 500	4 500	4 000	4 000	3 000	5 000
Manganese ore (a)	tonnes	2 124 000	1 940 000	1 656 000	2 192 000	1 970 000	2 529 000	2 544 000	3 143 000	3 200 000	3 128 000
Nilica	tonnes (metal content)	*4 000	*4 000	*5 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000
Nickel, mine	tonnes	31 936	36 764	43 784	45 317	45 456	44 928	45 456	44 928	74 198	82 492
Nickel, smelter/refinery	tonnes	19 379	25 753	32 237	31 751	33 680	29 961	30 514	32 101	36 315	36 569
Crude petroleum	tonnes	44 545 677	51 620 023	58 310 277	65 720 000	68 950 000	77 600 000	80 300 000	79 820 000	88 600 000	93 600 000
Natural gas	million m ³	6 000	6 300	6 700	8 200	8 400	10 000	10 900	11 900	12 200	12 700
Phosphate rock (b)	tonnes	4 257 391	4 437 818	4 343 638	4 725 106	4 684 546	5 083 703	5 583 778	5 689 000	5 631 000	5 801 000
Potash	tonnes (K ₂ O content)	270 825	315 606	336 623	351 748	318 585	337 266	415 549	403 080	404 871	403 080
Chloride	Rare earth minerals	tonnes	...	...	...	—	—	—	—	—	—
Monazite	Salt	tonnes	1 452 000	1 484 257	1 430 041	1 448 000	1 208 000	1 274 000	1 420 000	1 442 000	1 559 000
Rock salt	tonnes	5 064 000	5 288 000	4 528 000	4 626 000	4 835 000	5 144 000	5 205 968	5 519 618	5 519 618	1 624 000
Sea salt	Sillimanite minerals	tonnes	*50	47	171	*200	*200	*200	*200	6 192	5 122 197
Kyanite (b)	Silver, mine	kilograms (metal content)	10 000	10 000	10 000	10 000	10 000	10 000	6 496	6 672	6 541
Sulphur and pyrites	Pyrites	tonnes (sulphur content)	22 783	25 719	23 232	23 720	24 468	22 620	19 246	24 174	24 174
Recovered (e)	Recovered (f)	tonnes (sulphur content)	175 511	186 806	217 119	217 238	280 079	284 184	285 824	279 631	266 817
Talc	Talc	tonnes	(b) 265 042	(b) 258 695	(b) 216 454	(g) 450 000	(g) 397 000	19 246	19 618	20 954	20 954
Agalmatolite (b)	Agalmatolite (b)	tonnes	111 083	98 445	105 306	11 451	...	77 185	90 332	112 093	117 203
Pyrophyllite (b)	Tantalum and niobium minerals	tonnes	18 259	11 173	11 451	...	...	...	...	...	...
Tantalum and niobium minerals	Pyrochlore)	tonnes	42 255	(h) 51 000	(h) 42 100	63 117	*70 000	*60 000	*66 000	*79 000	*146 000
Columbite-tantalite	tonnes	2 600	5 100	5 400	6 400	7 300	5 800	6 200	6 500	6 600	*175 000
Djalmaita	tonnes (metal content)	19 065	(l) 14	(l) 23	(l) 84	...	...	...	...	...	*5 400
Tin, mine	Tin, smelter	tonnes	17 525	14 607	13 200	14 200	13 016	12 023	12 217	12 202	11 739
Titanium minerals	Ilmenite	tonnes	184 655	115 444	234 209	123 000	144 644	177 027	120 160	133 000	127 142
Rutile	Tungsten, mine (i)	tonnes (metal content)	2 196	2 323	3 388	3 162	2 270	1 878	2 303	2 117	2 069
Uranium, mine	Vermiculite (b)	tonnes	40	...	13	18	22	24	30	293	557
Zinc, mine	Zinc, zinc	tonnes (metal content)	22 248	31 658	40 045	—	50	58	270	310	525
Slab zinc	Zirconium minerals (j)	tonnes	152 634	87 475	98 590	100 254	31 676	21 000	23 000	26 000	30 000
		tonnes	192 701	183 806	194 010	198 777	111 432	136 339	152 822	170 659	185 211
		tonnes	19 252	21 483	27 048	28 335	204 037	254 700	273 000	274 000	279 000
							17 031	20 000	25 263	25 657	25 120

Note(s):-

- (a) Including beneficiated and direct shipping ore
- (b) Including beneficiated and directly shipped material
- (c) Beneficiated
- (d) Including scrap for direct use
- (e) From metal sulphide processing

(f) From petroleum refining and/or natural gas

(g) Including talc, agalmatolite and pyrophyllite

(h) Data for Minas Gerais only

(i) Mainly scheelite

(j) Including caldasite rock containing zircon and baddeleyite

Chile

The minerals industry makes a significant contribution to the Chilean economy largely as a result of its huge copper endowment. Chile is the world's leading copper producer and exporter, accounting for 35 per cent of world copper production. Chile is the world's second largest producer of molybdenum (23.2 per cent) and lithium minerals. Chile is the world's fifth largest silver producer and the third largest gold producer in South America, with a significant proportion of gold and silver produced as a by-product of copper extraction. Chile is the world's leading producer of iodine, accounting for more than 60 per cent of global production, and is the world's fourth largest producer of borates. Chile lacks significant resource of energy minerals and is becoming increasingly dependent on imports.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
White arsenic (a)	tonnes	11 159	11 690	9 789	10 712	*10 000	*10 000	*10 000	*10 000	*10 000	*10 000
Barytes	tonnes	2 654	1 430	823	1 026	584	384	229	31	91	375
Bentonite and fuller's earth	tonnes	717	721	1 104	1 314	1 695	632	748	101	—	—
Borates	tonnes	170 605	280 140	324 691	337 966	327 743	431 293	400 603	594 191	460 683	459 645
Coal	tonnes	134 435	116 611	82 240	110 039	123 320	129 939	136 495	140 186	138 056	98 673
Bituminous	tonnes	1 278 862	113 564	425 110	393 311	444 767	321 687	98 121	594 309	575 071	575 071
Lignite	tonnes (metal content)	3 392 000	3 686 900	4 391 200	4 602 000	4 739 000	4 580 600	4 904 200	5 412 500	5 360 800	5 360 800
Copper, mine	tonnes	1 389 600	1 403 100	1 473 900	1 460 400	1 503 200	1 438 700	1 542 400	1 517 600	1 558 100	1 565 400
Copper, smelter	tonnes	2 116 600	2 334 100	2 666 400	2 668 300	2 882 200	2 850 100	2 901 900	2 836 700	2 824 000	2 811 300
Copper, refined	tonnes	11 825	14 868	14 477	13 384	22 705	30 274	25 594	30 015	27 091	28 900
Diatomite	tonnes	3 808	1 460	1 346	2 311	2 867	3 069	6 690	4 838	5 820	8 547
Feldspar	tonnes	49 459	44 980	48 069	54 143	42 673	38 688	38 954	39 986	40 447	42 100
Gold, mine	tonnes (metal content)	398 354	780 676	886 294	375 847	516 876	609 550	662 259	630 444	660 753	845 331
Gypsum	tonnes	(a) 8 832 344	9 722 000	9 317 000	10 474 000	11 355 000	11 648 000	13 916 000	14 931 000	15 346 000	16 494 000
Iodine	kilograms	8 738 191	9 112 055	8 345 035	8 728 927	8 834 152	7 268 803	8 011 023	8 003 491	7 862 000	8 629 000
Iron ore	tonnes	941 465	992 568	1 029 522	1 023 695	897 800	963 900	987 800	1 137 000	1 100 000	1 121 000
Pig iron	tonnes	1 167 492	1 171 409	1 290 512	1 351 986	1 246 863	1 279 549	1 377 400	1 579 000	1 541 000	1 557 000
Crude steel	tonnes	5 608	5 122	2 833	4 011	1 975	—	—	—	—	—
Ferro-alloys	tonnes	3 175	3 921	2 048	1 802	1 53	—	—	—	—	—
Ferro-manganese	tonnes	3 157	1 978	2 079	1 454	1 784	—	—	—	—	—
Ferro-silico-manganese	tonnes	1 294	1 159	1 000	*1 000	*1 100	*1 100	—	—	—	—
Kaolin	tonnes (metal content)	14 238	11 530	4 361	6 445	5 300	6 164	11 500	51 789	15 183	44 642
Lead, mine	tonnes	1 264	337	608	785	1 193	2 895	1 697	2 286	878	672
Lithium minerals (b)	tonnes	24 246	28 377	30 231	35 869	31 320	35 242	41 667	43 971	43 595	50 035
Manganese ore	tonnes	63 673	48 931	40 505	41 716	31 320	12 195	19 641	25 301	39 786	37 169
Mercury (c)	kilograms	*25 000	*25 000	*25 000	*25 000	*37 400	*50 000	*50 000	*50 000	*50 000	*50 000
Molybdenum, mine	tonnes (metal content)	21 339	25 298	27 270	33 639	33 492	29 467	33 375	41 883	47 885	43 158
Crude petroleum	tonnes	446 117	427 553	335 558	297 247	351 688	300 000	187 000	183 000	171 000	183 000
Natural gas	million m ³	3 211	3 218	2 957	2 702	2 684	2 543	2 181	2 106	2 394	2 106
Phosphate rock	tonnes	12 605	31 405	20 408	18 524	18 977	19 541	21 300	21 465	20 363	13 836
Potash	tonnes (K ₂ O content)	*245 000	*285 000	*345 000	*360 000	*420 000	575 000	563 000	559 000	547 000	*450 000
Chloride	tonnes (K ₂ O content)	*45 000	*47 000	*49 000	*53 000	*57 000	—	—	—	—	—
Nitrate	tonnes	5 488 135	6 207 266	6 074 426	5 082 911	5 989 416	3 502 613	6 213 473	4 938 928	6 067 583	4 580 471
Salt	tonnes	(a) 63	(a) 29	(a) 70	(a) 47	(a) 84	—	—	—	—	—
Selenium metal	kilograms (metal content)	1 091 311	1 340 199	1 380 711	1 242 194	1 348 667	1 210 473	1 312 789	1 360 140	1 399 539	1 607 164
Silver, mine	tonnes (sulphur content)	768 000	899 000	1 037 000	1 096 000	1 160 000	1 231 000	1 426 000	1 507 000	1 788 000	1 605 000
Sulphur and pyrites	tonnes (metal content)	710	842	625	576	792	563	840	722	886	704
Recovered (d)	tonnes	33 934	15 943	32 263	31 403	32 762	36 161	33 051	27 635	28 841	36 238

Note(s):- (a) Exports (b) Carbonate (c) From copper solvent extraction and electrowinning processes (d) From metal sulphide processing

Colombia

Energy minerals make a significant contribution to Colombia's economy. It is the leading producer of coal in South America, accounting for more than 80 per cent of the region's coal production, and the continent's fifth ranked petroleum producer. Colombia is the only producer of platinum group metals in South America and the largest producer of nickel and ferronickel, accounting for 6.2 per cent of world

nickel production. Despite a substantial fall in production during 2006 Colombia remains an important gold producer, ranking as the fifth largest producer in South America. Security improvements and revisions to the mining code have resulted in considerable foreign interest in Colombia's minerals industry over the last two years.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Asbestos (a)	tonnes	136 700	128 446	61 125	59 249	96 140	62 785	*60 000	*60 000	*60 000	*60 000
Barytes	tonnes	900	*900	*900	*8 500	*8 500	*8 500	*8 500	*2 000	*2 000	*2 000
Bentonite	tonnes	8 640	*8 500	*8 500	*8 500	*8 500	*8 500	*8 500	*8 500	*8 500	*8 500
Coal	tonnes (metal content)	32 797 000	33 751 000	32 754 000	38 142 000	43 440 700	39 484 000	50 028 000	53 691 000	59 064 000	65 596 000
Bituminous	tonnes	1 800	*1 800	*2 100	2 018	2 000	*4 000	*4 000	1 500	1 600	1 800
Copper, mine	tonnes	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000
Diatomite	tonnes	66 845	*55 000	*55 000	*55 000	*55 000	93 450	*100 000	*100 000	*100 000	*100 000
Feldspar	kilograms (metal content)	18 811	34 599	37 018	21 813	20 823	46 515	37 738	35 783	35 783	15 683
Gold, mine	tonnes	564 681	*560 000	*560 000	*560 000	*560 000	*560 000	*560 000	*560 000	*700 000	*750 000
Gypsum	tonnes	754 772	525 825	576 414	660 109	636 837	688 106	625 002	507 711	607 559	644 015
Iron ore	tonnes	323 701	255 896	264 362	272 254	318 953	309 300	288 000	283 300	325 000	351 000
Pig iron	tonnes	733 951	635 814	534 038	659 882	638 259	662 859	668 400	806 000	1 007 000	1 058 000
Crude steel	tonnes	58 500	65 400	65 900	64 500	89 400	101 000	108 100	111 700	122 700	118 900
Ferro-alloys	tonnes	*10 000	*12 000	*11 000	*10 000	*9 000	*9 000	*9 000	*9 000	*10 000	*10 000
Ferro-nickel	tonnes	*10 500	*10 500	*10 500	*10 500	*10 500	*10 500	*10 500	*10 500	*10 500	*10 500
Lead, refined	tonnes	31 230	29 422	39 274	58 927	53 000	58 500	70 800	75 100	89 000	94 100
Magnesite	tonnes (metal content)	25 170	28 140	28 341	27 737	38 446	43 412	46 482	48 016	52 749	51 137
Nickel, mine	tonnes	33 622 738	38 885 956	42 041 092	35 527 000	31 158 988	29 806 000	27 907 653	27 200 000	27 100 000	27 200 000
Nickel, smelter/refinery	million m ³	5 900	6 300	5 200	5 900	6 100	6 200	6 100	6 400	6 800	7 300
Crude petroleum	tonnes	44 517	43 688	43 148	42 615	42 615	*43 000	*43 000	*43 000	*43 000	*43 000
Natural gas	tonnes	406	411	488	339	673	661	841	1 209	1 082	1 438
Phosphate rock	tonnes	141 923	165 699	156 933	177 687	168 139	180 714	207 486	232 460	215 905	248 245
Platinum group metals	kilograms (metal content)	232 085	330 404	304 433	292 189	383 529	351 324	244 053	302 101	445 562	389 630
Salt	tonnes	3 515	5 218	7 593	7 970	7 242	6 986	9 511	8 542	7 142	8 399
Rock salt	tonnes										
Sea salt	tonnes										
Silver, mine	kilograms (metal content)										
Sulphur and pyrites	tonnes (sulphur content)	14 872	*15 000	*16 000	15 465	23 880	23 660	*24 000	*24 000	*24 000	*24 000
Recovered (b)	tonnes (sulphur content)	53 541	52 727	89 024	91 996	60 162	73 024	97 586	64 660	30 018	30 018
Sulphur ore	tonnes	14 832	*15 000	*15 000	*15 000	*15 000	*15 000	*15 000	*15 000	*15 000	*15 000
Talc (c)											

Note(s):-

- (a) Crude
- (b) From petroleum refining and/or natural gas
- (c) Including talc, agalmatolite and pyrophyllite

Ecuador

Petroleum dominates Ecuador's mineral resources sector and it ranks as the fourth largest producer in South America, accounting for 8.1 per cent of the continent's production. Ecuador also produces a range of industrial minerals including feldspar, kaolin and baryte. Recent revisions to Ecuador's mining

laws and taxation regime, coupled with investor concern over resource nationalisation and public protests against exploration and mining activities, are likely to adversely affect development of Ecuador's minerals sector.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
Barytes	tonnes	—	—	2 532	1 476	* 180	2 139	3 694	3 879	*4 000		
Feldspar	tonnes	60 328	69 319	33 142	47 041	60 688	31 254	44 268	53 469	38 250	67 884	
Gold, mine	kilograms (metal content)	3 069	1 474	2 026	2 871	3 005	2 750	5 158	5 228	5 338		
Gypsum	tonnes	1 510	1 672	1 456	1 043	834	4 730	5 203	232	1 310	1 478	
Crude steel	tonnes	43 700	45 784	53 000	58 483	59 732	67 233	79 800	72 000	83 000	86 000	
Kaolin	tonnes	7 348	5 600	20 652	11 022	8 878	8 483	11 884	5 646	25 078	11 504	
Crude petroleum	tonnes	19 766 766	19 121 078	19 011 567	20 390 618	20 570 265	20 053 000	21 414 000	26 826 000	27 085 000	27 291 000	
Natural gas	million m ³	113	113	113	142	170	113	142	170	255	283	
Salt	tonnes	*75 000	*75 000	*75 000	*75 000	*75 000	*75 000	*75 000	*75 000	*75 000	*75 000	
Sulphur and pyrites	tonnes (sulphur content)	14 900	18 900	17 200	20 800	*20 700	*20 700	*20 700	*20 700	*20 700	*21 000	
Recovered (a)	tonnes (sulphur content)	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	*4 000	
Sulphur ore	tonnes (sulphur content)											

Note(s):-

(a) From petroleum refining and/or natural gas

French Guiana

Gold and construction minerals are the main mineral commodities produced in French Guiana, an overseas department of France and the smallest country on the South American continent. Investment in the minerals sector has largely focused on gold and petroleum exploration.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Gold, mine	kilograms (meta content)	3 225	2 735	2 972	3 376	4 062	3 290	3 296	2 773	1 955	*2 000

Guyana

Minerals make a significant contribution to GDP in Guyana, the third smallest country in South America. Guyana is a globally significant bauxite producer, accounting for 4.2 per cent of South American

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bauxite	tonnes	2 470 895	2 267 368	2 359 272	2 689 451	2 011 301	1 639 266	1 712 236	1 473 897	1 675 842	1 470 605
Diamond	carats	36 573	34 399	45 441	81 706	179 463	248 437	412 538	454 940	356 948	343 544
Gold, mine	kilograms (metal content)	13 577	14 146	13 159	13 525	14 179	14 104	12 171	11 478	8 325	6 405

production. Guyana is the largest producer of diamonds in South America and accounts for around 1.7 per cent of the region's gold production.

Paraguay

This landlocked South American country hosts deposits of a range of industrial and construction minerals. The minerals sector makes a minimal contribution to GDP producing mainly clays, pig iron

and steel. Although Paraguay has no known petroleum or gas reserves and is entirely dependent on imports it is a major producer and exporter of hydroelectric power.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Gypsum	tonnes	*5 000	*5 000	*4 000	4 400	4 300	*4 300	*4 500	*4 500	*4 500	*4 500
Pig iron	tonnes	78 615	65 545	61 281	71 763	87 400	98 000	119 000	123 000	131 000	131 000
Kaolin	tonnes	*66 700	*66 500	*66 500	*66 500	*66 700	*66 600	*66 600	*66 600	*66 000	*66 000
Crude steel	tonnes	65 542	56 243	55 689	76 784	70 664	79 984	91 000	115 000	101 000	126 000

Peru

Peru is a leading global producer of a number of mineral commodities. It is the world's largest silver producer, accounting for 17.2 per cent of global production. Peru is South America's largest gold producer generating more than 50 per cent of the region's gold and ranking as the world's fifth largest producer. Peru's gold production has increased substantially during the last decade from 78 000 kilogrammes in 1997 to 203 000 kilograms in 2006, thanks to new large-scale mines such as Yanacocha.

Peru is the world's second largest tellurium producer and one of the world's dominant arsenic producers. It is the third largest producer of copper (production has more than doubled since 1997), zinc, tin and bismuth, accounting for 20.8 per cent of global bismuth production. Peru is the world's fourth largest producer of lead and molybdenum, accounting for 8.9 and 9.2 per cent of world production of each of these metals respectively.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Mine antimony (a)	tonnes (metal content)	242	364	255	461	274	352	616	465	807	1 395
White arsenic	tonnes	837	624	1 611	2 495	1 958	1 613	4 640	3 037	3 150	4 399
Barytes	tonnes	63 727	7 506	3 512	11 403	11 031	3 806	2 906	9 610	26 985	1 899
Bentonite and fuller's earth	tonnes										
Bentonite	tonnes	20 171	19 563	19 659	21 059	18 217	20 760	15 290	10 510	14 663	14 590
Mine bismuth (b)	tonnes (metal content)	774	832	705	744	640	568	832	988	952	1 081
Borates	tonnes	46 979	22 002	14 716	9 309	9 374	8 814	11 072	9 729	8 290	9 800
Cadmium	tonnes	474	535	466	482	485	422	530	532	481	416
Coal	tonnes										
Anthracite & bituminous	tonnes (metal content)	21 694	7 385	1 488	16 625	20 219	21 579	17 104	57 759	29 535	107 091
Copper, mine	tonnes	506 498	483 338	536 387	553 924	722 035	842 578	1 035 574	1 035 574	1 009 898	1 049 933
Cooper, smelter	tonnes	347 447	354 678	350 377	340 447	384 912	380 834	314 228	320 135	321 968	322 188
Copper, refined	tonnes	395 073	411 429	436 339	451 728	471 875	502 749	517 046	505 306	510 392	507 710
Diatomite	tonnes	*35 100	*35 100	*35 000	*35 000	*35 000	*35 000	*35 000	*35 000	*35 000	*35 000
Feldspar	tonnes	2 502	3 983	5 194	5 642	3 062	6 018	7 349	6 005	9 038	9 287
Gold, mine	kilograms (metal content)	77 940	94 214	128 486	132 585	138 022	157 298	172 619	173 219	207 822	203 269
Gypsum	tonnes	63 640	78 656	75 636	52 346	20 966	75 306	136 642	432 259	334 595	394 289
Iron ore	tonnes	4 746 070	4 905 632	4 078 186	4 143 299	4 563 551	4 566 000	5 228 804	5 228 800	5 614 900	5 885 000
Pig iron	tonnes	367 795	343 341	242 952	409 185	383 285	267 200	310 400	353 000	341 000	390 000
Crude steel	tonnes	607 391	630 687	558 697	750 682	689 790	611 363	668 400	726 000	790 000	885 000
Kaolin	tonnes	7 875	4 968	1 332	6 165	5 478	1 934	2 653	2 720	1 200	1 022
Mine lead	tonnes (metal content)	262 466	257 713	271 782	270 576	289 546	298 487	308 874	306 211	319 345	313 325
Lead, refined	tonnes	97 882	109 493	111 276	116 412	121 181	119 588	112 289	118 970	122 079	120 311
Molybdenum, mine	tonnes (metal content)	4 261	4 336	5 472	7 193	9 499	8 613	9 561	14 246	17 325	17 299
Crude petroleum	million m ³	5 826 583	5 696 200	5 219 862	4 902 588	4 784 726	4 773 299	4 501 500	4 637 000	5 484 000	5 578 000
Natural gas	tonnes	67 136	650	678	612	629	687	759	849	1 586	1 784
Phosphate rock	tonnes	79 492	220 310	230 393	247 619	4 18 954	281 098	187 416	248 389	438 375	*800 000

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Selenium metal	tonnes	13	18	65	63	61	70	72	76	70	75
Silver, mine	kilograms (metal content)	2 090 311	2 024 570	2 231 390	2 437 706	2 673 834	2 761 486	2 910 922	3 059 829	3 193 146	3 470 725
Sulphur and pyrites	tonnes (sulphur content)	141 000	177 000	191 000	196 000	203 000	201 000	204 000	204 000	211 000	199 000
Recovered (c)											
Talc	tonnes	6 735	11 165	12 085	9 668	10 737	10 685	10 791	8 312	14 251	14 618
Talc	tonnes	*8 000	*8 000	*8 000	*8 000	8 069	9 514	12 291	14 282	10 100	—
Pyrophyllite	tonnes	25	22	17	22	19	22	26	25	33	37
Tellurium metal	tonnes (metal content)	27 953	25 907	30 618	37 410	38 182	38 815	40 202	41 613	42 145	38 470
Tin, mine (d)	tonnes	8 759	13 928	17 342	17 357	25 070	35 828	39 181	40 624	36 733	40 495
Tin, smelter	tonnes (metal content)	226	60	—	—	—	—	—	—	—	—
Tungsten, mine	tonnes (metal content)	867 691	868 757	899 524	910 303	1 056 629	1 221 616	1 372 790	1 209 006	1 201 671	1 201 794
Zinc, mine	tonnes	171 191	174 654	196 978	199 813	204 646	172 688	202 076	195 692	163 603	175 250
Slab zinc											

Note(s):-

- (a) Including Sb content of antimonial lead plus Sb content of ores for export
- (b) Metal production
- (c) From metal sulphide processing
- (d) Recoverable

Suriname

The smallest independent country in South America is one of the world's largest bauxite producers, accounting for more than two per cent of world production. Accordingly, Suriname is also a major

alumina producer. A new gold mine opened in 2004, ranking Suriname as South America's sixth largest gold producer. Additional gold production is derived from alluvial operations.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bauxite	tonnes	3 877 183	3 931 108	3 714 595	3 610 381	4 393 640	4 001 602	4 215 061	4 087 107	4 756 998	4 945 353
Alumina	tonnes (Al ₂ O ₃ content)	1 725 857	1 771 889	1 853 052	1 906 073	1 893 254	1 902 706	2 004 538	2 014 622	1 939 615	2 151 148
Primary aluminium	tonnes	23 128	27 416	6 638	—	—	—	—	—	—	—
Gold, mine	kilograms (metal content)	...	...	...	...	...	...	...	8 513	10 619	10 426
Crude petroleum	tonnes	620 000	600 000	700 000	720 000	764 000	733 000	690 000	661 000	707 000	774 000

Uruguay

The mining sector makes a minimal contribution to the economy of Uruguay, the second-smallest country in South America. Uruguay produces a number of mineral commodities, including gold and steel and a range of industrial and construction minerals. Uruguay is one of South America's smaller gold producers with a single producing mine. Uruguay is completely reliant on imports of petroleum products. However, there is current interest in oil exploration and the country has recently completed an appraisal of natural gas reserves.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Feldspar	tonnes	3 229	2 240	1 556	2 493	3 522	1 550	2 450	1 950	2 150	2 470
Gold, mine	kilograms (metal content)	1 200	2 303	2 392	2 240	2 083	1 550	1 758	2 930	*2 800	—
Crude steel	tonnes	39 070	52 012	45 404	38 102	30 890	34 400	40 500	58 000	64 000	47 000
Talc	tonnes	1 133	972	2 905	2 093	1 695	816	1 095	1 042	1 131	1 544

Venezuela

Minerals, in particular petroleum, make an important contribution to the Venezuelan economy. Venezuela is the world's seventh largest petroleum producer, accounting for 3.7 per cent of world production. Venezuela is the second largest natural gas producer in South America, after Argentina, and is responsible for 24.1 per cent of the continent's production. Venezuela is also an important producer of non-fuel minerals accounting for 2.9 per cent of global bauxite production, 2.7 per cent of world alumina production, 1.8 per cent of world aluminium production and 1.2 per cent of global nickel

production. Venezuela is an important regional producer of a number of other minerals including gold and iron ore (second largest producer after Brazil). Political changes resulting in nationalisation of key sectors of the economy have raised concerns about how current government policies could affect the minerals sector. In addition the denial of mining permits to some high profile projects has sparked concern among foreign investors.

Commodity	Units	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bauxite	tonnes	4 966 794	4 825 647	4 166 450	4 360 720	4 584 893	5 190 806	5 445 516	5 814 705	5 900 000	5 928 000
Alumina	tonnes (Al ₂ O ₃ content)	1 730 368	1 553 445	1 468 489	1 755 265	1 833 162	1 901 000	1 882 007	*1 900 000	1 931 000	1 920 000
Primary aluminium	tonnes	642 000	586 499	570 321	571 463	579 000	604 000	601 290	631 100	624 000	617 100
Coal											
Bituminous	tonnes	5 291 908	6 458 324	6 594 611	7 880 516	7 685 476	8 097 016	7 033 729	8 107 304	7 194 882	7 458 873
Diamond	carats	284 208	96 811	95 144	109 597	52 804	141 463	38 489	40 036	55 154	16 981
Feldspar	tonnes	160 000	148 000	125 000	129 529	142 425	146 619	149 450	175 864	202 000	200 000
Gold, mine	kilograms (metal content)	22 322	6 740	5 946	7 332	9 076	9 465	8 190	9 690	*10 000	*13 200
Gypsum	tonnes	80 000	72 000	42 000	25 000	5 000	10 000	5 000	4 000	6 000	*7 000
Iron ore	tonnes	18 359 509	16 784 217	14 050 827	17 352 963	16 902 437	16 595 634	17 954 495	19 196 231	21 179 000	22 100 000
Pig iron	tonnes	5 607 558	5 423 881	5 071 050	6 401 348	5 903 298	6 844 370	6 645 700	7 825 000	8 900 000	8 451 000
Crude steel	tonnes	3 986 549	3 553 315	3 261 365	3 834 575	3 812 664	4 163 855	3 930 300	4 561 000	4 907 000	4 745 000
Ferro-alloys											
Ferro-manganese	tonnes	6 010	7 671	10 694	15 655	12 715	*12 000	*12 000	*15 000	*15 000	*15 000
Ferro-silico-manganese	tonnes	57 876	48 504	47 635	69 735	56 640	36 974	30 632	*35 000	*35 000	*35 000
Ferro-nickel	tonnes	—	—	—	3 200	32 300	51 700	57 300	67 796	56 300	57 000
Ferro-silicon	tonnes	58 000	35 571	55 505	86 188	85 708	87 528	90 534	*92 000	*92 000	*92 000
Kaolin	tonnes	5 000	4 000	12 000	*10 000	*10 000	*10 000	*10 000	*10 000	*10 000	*10 000
Lead, refined	tonnes	25 000	25 000	25 000	*21 000	*28 000	*28 000	*32 000	*35 000	*35 000	*36 000
Nickel, mine	tonnes (metal content)	—	—	—	2 472	10 600	17 000	18 800	19 000	18 500	18 200
Nickel, smelter/refinery	tonnes	171 400 000	179 600 000	160 900 000	167 300 000	161 600 000	149 800 000	131 400 000	150 000 000	151 000 000	144 200 000
Crude petroleum	million m ³	30 830	32 335	27 410	27 924	29 593	28 415	25 200	28 100	28 900	28 700
Natural gas	tonnes	291 000	322 000	366 000	359 000	398 955	390 342	260 008	300 057	392 000	*400 000
Phosphate rock	tonnes	*350 000	*350 000	*350 000	*350 000	*350 000	*350 000	*350 000	*350 000	*350 000	*350 000
Salt (a)											
Sulphur and pyrites	tonnes (sulphur content)	319 000	425 000	350 000	320 000	340 000	570 000	560 000	730 000	950 000	950 000
Recovered (b)	tonnes	*32 000	*32 000	*32 000	......	......	......	......	......	......	...
Talc											

Note(s):-

- (a) Sea salt
- (b) From petroleum refining and/or natural gas

