

China and South East Asia Mineral Production



2001–2005



British
Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

BRITISH GEOLOGICAL SURVEY

China and South East Asia Mineral Production 2001-2005

A product of the World Mineral Statistics database

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Front cover

Sepon gold and copper mine, Laos © Oxiana Limited

Located in the Savannakhet Province of south-central Laos, Oxiana has been producing gold at Sepon since 2002 and copper since early 2005. Gold and copper deposits discovered in the Sepon district now contain an estimated 3.3 million ounces of gold and 1.7 million tonnes of contained copper. The Sepon copper operation is now the most modern and technologically advanced hydro-metallurgical facility in Asia. Exploration by Oxiana continues to increase these resources.

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EXPLANATORY NOTES

The statistics in this publication are from a more comprehensive database that is published as *World Mineral Production 2001-05*.

Coverage

China & South East Asia 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.

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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 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, and UN Agencies.

In addition, information has been obtained from the websites of the following organisations: United Nations; International Iron and Steel Institute; World Nuclear Association; South East Asia Iron and Steel Institute; China Mining Association; Bank Negara Malaysia; Mines and Geosciences Bureau, Philippines; Bank of Thailand.

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 attapulgit, 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 electro-winning 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) With the exception of China, 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

STATISTICAL TABLES

Brunei

The Sultanate of Brunei has one of the highest per capita GDP rates in Asia, due in large part to its production of oil and gas which represent 90 per cent of the country's exports. However, in world terms, Brunei produced just 0.3 per cent of the world's crude petroleum in 2005 and 0.4 per cent of the world's natural gas.

Commodity	Units	2001	2002	2003	2004	2005
Crude petroleum	tonnes	10 100 000	10 096 000	10 306 000	10 300 000	10 100 000
Natural gas	million m ³	11 300	11 200	12 400	12 200	12 000

Burma

Also known as Myanmar, and controlled by a military junta, Burma is rich in resources but lacking a climate suitable for investment. In 2005 the country's production of no mineral exceeded 0.5 per cent of the world's total.

Commodity	Units	2001	2002	2003	2004	2005
Barytes	tonnes	26 800	15 100	4 900	2 200	3 000
Bentonite and fuller's earth						
Bentonite (a)	tonnes	634	*600	*600	*500	*500
Chromium ores and concentrates (a)	tonnes	*3 000	*3 000	*3 000	*3 000	*3 000
Coal (a)	tonnes	41 736	115 175	109 214	237 949	240 000
Copper, mine	tonnes (metal content)	25 800	27 500	27 900	31 800	34 500
Copper, refined	tonnes	25 800	27 500	27 900	31 800	34 500
Feldspar	tonnes	*10 000	*10 000	*10 000	*10 000	*10 000
Gold, mine (b)	kilograms (metal content)	*100	*100	*100	*100	*100
Gypsum (a)	tonnes	64 609	90 002	66 069	71 155	*71 100
Pig iron	tonnes	*40 000	*40 000	*40 000	*40 000	*40 000
Lead, mine	tonnes (metal content)	900	2 000	2 000	2 000	2 000
Lead, refined	tonnes	1 100	400	900	300	500
Crude petroleum	tonnes	734 000	858 000	1 051 000	1 044 000	1 100 000
Natural gas	million m ³	7 200	8 400	9 600	10 200	13 000
Salt (c) (d)	tonnes	*35 000	*35 000	*35 000	*35 000	*35 000
Silver, mine (a) (e)	kilograms (metal content)	*700	*800	*800	*1 100	*1 000
Tin, mine	tonnes (metal content)	700	500	600	500	500
Tungsten, mine (f)	tonnes (metal content)	48	83	93	100	*100
Zinc, mine	tonnes (metal content)	500	100	100	200	1 600

Note(s):-

- (a) Years ended 31 March following that stated
- (b) Metal production
- (c) Brine salt
- (d) Sea salt
- (e) Smelter and/or refinery production
- (f) Including tungsten content of tin-wolframite concentrates

Cambodia

Despite emerging from many years of conflict, Cambodia remains one of the poorest countries in Asia. The mining sector is the smallest part of the country's economy and its resources remain largely untapped. In 2005, deposits of oil and gas were found in the country's territorial waters and mineral exploration is just beginning to take place.

Commodity	Units	2001	2002	2003	2004	2005
Salt	tonnes	11 000	72 500	36 000	*40 000	*40 000

China

China is the second largest economy in the world, after the USA, and has been experiencing annual GDP growth rates of nine or ten per cent for several years. Of the more than 70 minerals contained in the World Mineral Statistics database (BGS), China is the world's leading producer of 30. Of these, the country produces more than three quarters of the world's antimony, graphite, rare earth minerals and tungsten.

Commodity	Units	2001	2002	2003	2004	2005
Bauxite	tonnes	*8 650 000	12 958 700	14 567 000	17 518 000	*18 000 000
Alumina	tonnes (Al ₂ O ₃ content)	4 746 500	5 449 600	6 112 100	6 980 000	8 512 000
Primary aluminium	tonnes	3 575 800	4 321 000	5 546 900	6 688 800	7 806 000
Antimony, mine	tonnes (metal content)	97 000	121 547	126 000	125 400	*126 000
White arsenic	tonnes	*39 500	*40 000	*40 000	*30 000	*30 000
Asbestos	tonnes	257 581	*480 000	*430 000	438 962	332 407
Barytes	tonnes	3 985 200	2 700 000	3 300 000	3 700 000	4 100 000
Bentonite and fuller's earth						
Bentonite	tonnes	1 289 700	*1 900 000	*2 400 000	3 000 000	3 100 000
Beryl	tonnes	*500	*500	*500	*500	*500
Bismuth, mine (a)	tonnes (metal content)	1 245	944	1 036	1 857	*2 000
Borates	tonnes	346 500	*283 000	*270 000	*275 000	*280 000
Bromine	kilograms	*40 000 000	*42 000 000	*42 000 000	*43 000 000	*43 000 000
Cadmium	tonnes	2 507	2 426	2 705	4 528	*3 000
Chromium ores and concentrates	tonnes	181 900	164 200	197 800	230 000	220 000
Coal						
Anthracite	tonnes	190 000 000	250 000 000	218 000 000	220 000 000	246 000 000
Bituminous	tonnes	965 000 000	1 110 000 000	1 470 000 000	1 690 000 000	1 888 000 000
Lignite	tonnes	47 800 000	53 000 000	52 000 000	50 000 000	56 000 000
Cobalt, mine	tonnes (metal content)	150	1 004	707	1 253	*1 000
Cobalt, metal	tonnes	1 470	1 842	4 576	(b) *8 000	(b) 12 700
Copper, mine	tonnes (metal content)	587 000	568 100	604 400	742 200	*800 000
Copper, smelter	tonnes	1 145 100	1 179 900	1 379 200	1 502 900	2 083 000
Copper, refined	tonnes	1 523 300	1 632 500	1 836 300	2 198 700	2 583 400
Diamond	carats	1 185 000	1 190 000	1 190 000	*1 190 000	1 190 000
Diatomite	tonnes	*350 000	*370 000	*380 000	370 000	400 000
Feldspar	tonnes	*2 000 000	*2 000 000	*2 000 000	2 300 000	2 300 000
Fluorspar	tonnes	*2 200 000	*2 150 000	*2 300 000	2 500 000	2 700 000
Germanium metal	tonnes	21	*20	*20	*20	*20
Gold, mine (c)	kilograms (metal content)	181 870	202 000	210 100	212 350	224 050
Graphite (d)	tonnes	1 700 000	1 400 000	*1 400 000	1 450 000	1 650 000
Gypsum	tonnes	*6 800 000	*6 850 000	*6 850 000	*7 000 000	*7 000 000
Iodine	kilograms	*500 000	*500 000	*500 000	*550 000	*550 000
Iron ore	tonnes	217 014 700	232 619 000	261 084 600	310 104 800	420 492 700
Pig iron	tonnes	155 542 500	170 850 000	213 666 800	251 850 500	330 900 000
Crude steel	tonnes	151 634 400	182 370 000	222 336 000	272 797 900	349 361 500
Ferro-alloys						
Ferro-chrome	tonnes	340 637	332 011	534 842	635 000	850 000
Ferro-silico-chrome	tonnes	59 859	43 492	97 552	105 000	70 000
Ferro-manganese	tonnes	947 300	(e) ...	(e) ...	(e) ...	(e) ...
Ferro-silicon	tonnes	1 384 900	(e) ...	(e) ...	(e) ...	(e) ...
Other ferro-alloys	tonnes	1 799 000	4 465 000	5 708 000	7 973 000	*9 300 000
Silicon metal	tonnes	*400 000	*500 000	*600 000	*660 000	*650 000
Kaolin	tonnes	*1 500 000	*1 500 000	*1 600 000	*1 800 000	*1 800 000
Lead, mine	tonnes (metal content)	676 000	640 700	954 600	997 200	1 023 000
Lead, refined	tonnes	1 195 400	1 324 700	1 564 100	1 934 500	2 334 000
Lithium minerals	tonnes	34 276	*34 000	*35 000	*36 000	*37 000
Magnesite	tonnes	*10 000 000	*10 000 000	*10 000 000	13 100 000	15 440 000
Primary magnesium metal	tonnes	199 700	235 000	341 800	442 400	467 600
Manganese ore	tonnes	4 306 800	*4 500 000	*4 600 000	*4 500 000	*4 500 000
Mercury	kilograms	193 000	495 000	612 000	1 140 000	1 150 000
Mica (f)	tonnes	*52 200	*54 000	*66 200	*84 000	*89 000
Molybdenum, mine	tonnes (metal content)	28 201	30 330	32 220	38 430	*40 000
Nickel, mine	tonnes (metal content)	51 000	53 700	61 100	75 600	*72 000
Nickel, smelter/refinery	tonnes	49 700	52 400	64 700	75 800	95 400
Perlite	tonnes	*550 000	*600 000	*650 000	*700 000	*700 000
Crude petroleum (g)	tonnes	164 931 400	166 900 000	169 600 000	174 502 900	180 838 900
Natural gas	million m ³	30 344	32 700	35 015	41 493	49 950
Phosphate rock	tonnes	24 371 100	*26 000 000	*27 500 000	*29 000 000	30 450 000
Potash	tonnes (K ₂ O content)	395 000	*430 000	*450 000	*450 000	450 000
Rare earth minerals (h)	tonnes	80 600	88 000	92 000	98 300	*98 000
Salt	tonnes	34 547 500	36 024 000	34 377 000	37 100 700	*37 000 000
Selenium metal	tonnes	*65	*65	*65	*65	280

China continued

Commodity	Units	2001	2002	2003	2004	2005
Sillimanite minerals						
Andalusite	tonnes	20 000	...	...	...	...
Kyanite	tonnes	27 700	...	...	...	...
Sillimanite	tonnes	163 100	...	...	...	...
Silver, mine	kilograms (metal content)	2 013 250	*2 200 000	2 400 000	2 450 000	2 500 000
Strontium minerals	tonnes	...	...	...	500 000	700 000
Sulphur and pyrites						
Pyrites	tonnes (sulphur content)	3 065 000	2 766 000	3 974 000	4 029 000	4 011 000
Recovered	tonnes (sulphur content)	2 391 000	2 400 000	2 637 000	3 070 000	3 195 000
Sulphur ore	tonnes (sulphur content)	260 000	450 000	700 000	827 000	950 000
Talc	tonnes	2 555 500	*2 600 000	*2 600 000	2 700 000	2 700 000
Tantalum and niobium minerals						
Columbite-tantalite	tonnes	357	*350	*350	*350	*350
Tin, mine	tonnes (metal content)	93 000	*81 000	101 800	118 200	*120 000
Tin, smelter	tonnes	104 900	81 800	98 100	115 300	119 400
Titanium minerals						
Ilmenite	tonnes	*750 000	*840 000	*840 000	*840 000	*1 015 000
Tungsten, mine	tonnes (metal content)	27 473	35 927	36 185	59 947	46 900
Uranium, mine	tonnes (metal content)	*665	*730	*750	*750	*750
Vanadium, mine	tonnes (metal content)	*12 000	*13 200	*14 000	*16 000	*16 000
Vermiculite	tonnes	*70 000	*80 000	*90 000	*100 000	*100 000
Wollastonite	tonnes	*400 000	*400 000	*400 000	345 000	350 000
Zinc, mine	tonnes (metal content)	1 693 200	1 624 100	2 029 100	2 391 200	2 525 000
Zinc, slab	tonnes	2 037 600	2 155 100	2 318 500	2 719 500	2 772 000
Zirconium minerals	tonnes	25 594	*20 000	*20 000	*20 000	*20 000

Note(s):-

(1) In addition, China is believed to produce platinum group metals

(a) Exports of metal have always been higher than mine production in recent years

(b) Some metal production in China is recorded in Belgium

(c) Metal production

(d) Including 350 000 tonnes of flake graphite in 2002

(e) Included with 'other ferro-alloys'

(f) Conservative BGS estimates, based on exports

(g) Including oil from shale and coal

(h) REO content. Assumed to be 60% of concentrates produced

Hong Kong

A Special Administrative Region of China since 1997, Hong Kong continues to operate under a free-market economy and is heavily dependent on international trade.

Commodity	Units	2001	2002	2003	2004	2005
Crude steel	tonnes	*100 000	*100 000	*100 000	*100 000	*100 000

Indonesia

The mineral sector in Indonesia has played a significant part in the country's economic development. It hosts some world-class mining operations and is a major producer of tin (second in the world), copper (third) and nickel (fourth).

Commodity	Units	2001	2002	2003	2004	2005
Bauxite	tonnes	1 237 006	1 283 485	1 262 705	1 330 827	1 081 739
Primary aluminium	tonnes	208 800	162 800	197 300	240 800	252 300
Bentonite and fuller's earth						
Bentonite	tonnes	*5 000	*5 000	*5 000	*5 000	*5 000
Coal						
Anthracite & bituminous	tonnes	91 928 000	103 372 000	114 278 000	132 352 000	146 943 000
Cobalt, mine	tonnes (metal content)	*650	*650	*650	*650	*650
Copper, mine	tonnes (metal content)	1 048 700	1 171 726	1 005 837	840 318	1 063 849
Copper, smelter	tonnes	217 500	211 200	247 400	211 600	275 000
Copper, refined	tonnes	212 500	192 400	223 300	210 500	262 900
Diamond	carats	*30 000	*30 000	*30 000	*30 000	21 606
Feldspar	tonnes	*24 000	*24 000	*24 000	*24 000	*24 000
Gold, mine	kilograms (metal content)	166 090	142 238	141 019	192 936	142 894
Gypsum	tonnes	6 000	6 000	6 000	6 000	*6 000
Iodine	kilograms	*75 000	*75 000	*75 000	*75 000	*75 000
Iron ore	tonnes	469 376	378 587	245 409	89 664	32 203
Pig iron	tonnes	1 487 000	1 446 000	1 171 000	1 436 000	1 700 000
Crude steel	tonnes	2 780 607	2 459 928	2 042 233	2 412 000	2 800 000
Ferro-alloys						
Ferro-manganese	tonnes	*12 000	*12 000	*12 000	*12 000	*12 000
Ferro-silico-Manganese	tonnes	*7 000	*7 000	*7 000	*7 000	*7 000
Ferro-nickel	tonnes	47 769	42 306	43 894	39 538	20 036
Kaolin	tonnes	*15 000	*15 000	*15 000	*15 000	*15 000
Lead, refined	tonnes	18 000	17 000	18 000	20 000	20 000
Nickel, mine	tonnes (metal content)	102 100	121 600	143 900	142 700	147 700
Nickel, smelter/refinery	tonnes	10 300	8 800	8 900	7 900	7 300
Crude petroleum	tonnes	68 000 000	63 277 000	57 839 000	54 495 000	55 000 000
Natural gas	million m3	66 300	68 795	69 341	66 998	*68 000
Salt	tonnes	*680 000	*680 000	*680 000	*680 000	*680 000
Silver, mine	kilograms (metal content)	348 455	293 520	285 206	262 935	326 993
Sulphur and pyrites						
Recovered (a)	tonnes (sulphur content)	212 000	196 000	212 000	172 000	212 000
Recovered (b)	tonnes (sulphur content)	70 000	95 000	95 000	100 000	105 000
Tin, mine	tonnes (metal content)	56 286	67 455	66 284	78 000	120 000
Tin, smelter	tonnes	53 470	58 800	62 500	86 900	78 000
Zirconium minerals	tonnes	*250	*250	*250	*200	*200

Note(s):-

(1) In addition, Indonesia is believed to produce phosphate rock, platinum group metals and rare earth minerals

(a) From metal sulphide processing

(b) From petroleum refining and/or natural gas

Laos

Whilst officially communist, the government of Laos does encourage foreign investment and the opening of the Sepon copper and gold mine has helped to produce a reasonable growth in GDP. Infrastructure in the country remains primitive but hydroelectric and road projects are underway.

Commodity	Units	2001	2002	2003	2004	2005
Barytes	tonnes	4 400	12 695	18 070	18 000	18 000
Coal	tonnes	122 942	233 823	212 819	332 907	232 934
Copper, mine	tonnes (metal content)	—	—	—	1 700	30 500
Copper, refined	tonnes	—	—	—	—	30 500
Gold, mine	kilograms (metal content)	—	—	5 300	4 392	6 232
Gypsum	tonnes	121 220	119 514	101 727	*102 000	131 508
Salt	tonnes	2 635	5 410	16 130	*15 000	*15 000
Silver, mine	kilograms (metal content)	—	—	4 400	2 735	3 100
Tin, mine	tonnes (metal content)	570	430	420	*400	*600
Zinc, mine	tonnes (metal content)	11 500	540	1 200	1 000	1 500

Malaysia

Although Malaysia hosts the second largest tin reserves in the world (behind China) its mine production continues to decline. However it remains the third largest tin smelter producer with 11 per cent of the world's total. Malaysia also produces oil and natural gas offshore of the state of Sabah (on the island of Borneo) and this remains a significant export.

Commodity	Units	2001	2002	2003	2004	2005
Bauxite	tonnes	64 161	39 975	5 732	2 040	4 735
Barytes	tonnes	649	3 082	—	—	—
Coal	tonnes	497 733	352 513	174 800	389 176	789 356
Feldspar	tonnes	40 509	30 819	42 662	79 220	83 580
Gold, mine	kilograms (metal content)	3 965	4 289	4 739	4 221	4 249
Iron ore (a)	tonnes	376 476	404 350	596 612	663 732	949 605
Pig iron	tonnes	1 020 000	1 060 000	1 600 000	1 710 000	1 400 000
Crude steel	tonnes	4 100 000	4 721 800	3 960 000	5 698 000	6 300 000
Kaolin	tonnes	364 458	323 916	425 942	326 928	494 511
Lead, refined	tonnes	38 000	40 000	57 000	54 000	55 000
Mica (b)	tonnes	4 107	3 669	3 609	3 544	4 544
Crude petroleum	tonnes	31 800 000	33 300 000	35 200 000	36 400 000	33 600 000
Natural gas	million m ³	46 945	48 308	50 810	53 670	59 880
Rare earth minerals						
Monazite	tonnes	643	441	795	1 683	320
Silver, mine	kilograms (metal content)	3	—	—	364	402
Tantalum and niobium minerals						
Struverite	tonnes	8 430	2 298	2 619	121	552
Tin, mine	tonnes (metal content)	4 972	4 215	3 358	2 745	2 857
Tin, smelter	tonnes	30 417	30 887	18 211	33 900	36 900
Titanium minerals						
Ilmenite	tonnes	129 750	106 198	95 148	61 471	38 196
Rutile	tonnes	...	7 059	18 472	27 308	5 509
Tungsten, mine	tonnes (metal content)	268	—	...	...	...
Zirconium minerals	tonnes	3 768	5 293	3 456	6 686	4 954

Note(s):-

(a) Including by-product Iron ore

(b) Sericite

Philippines

Despite recent moderate growth in GDP, the Philippines remains a poor nation with high debts. Natural resources represent only a very small part of the country's economy although it does produce 1.6 per cent of the world's smelter copper and approximately 1.5 per cent of the world's mined gold.

Commodity	Units	2001	2002	2003	2004	2005
Bentonite and fuller's earth						
Bentonite	tonnes	5 128	2 550	3 722	3 556	*3 600
Chromium ores and concentrates (a)	tonnes	27 926	22 000	33 778	42 139	36 070
Coal						
Bituminous	tonnes	1 229 822	1 645 659	2 029 303	2 726 500	1 485 000
Copper, mine	tonnes (metal content)	20 321	18 365	20 414	15 984	16 320
Copper, smelter	tonnes	165 000	165 800	227 900	217 300	201 300
Copper, refined	tonnes	164 500	144 300	171 200	174 600	172 000
Feldspar	tonnes	33 122	32 874	34 546	32 106	11 853
Gold, mine	kilograms (metal content)	33 841	36 005	37 844	35 464	37 490
Crude steel	tonnes	500 000	550 000	500 000	400 000	400 000
Kaolin	tonnes	5 111	*5 000	1 860	3 240	6 927
Lead, refined	tonnes	26 000	*26 000	*27 000	*29 000	*30 000
Magnesite	tonnes	4 094	3 604	3 799	3 201	2 413
Nickel, mine	tonnes (metal content)	27 176	24 234	19 537	16 973	22 560
Perlite	tonnes	61 300	8 500	15 200	12 100	9 700
Crude petroleum	tonnes	65 000	277 000	690 000	624 000	721 000
Salt (b)	tonnes	236 987	460 983	429 160	427 615	420 950
Selenium metal	tonnes	43	*40	*40	*40	*40
Silver, mine	kilograms (metal content)	29 590	8 810	9 533	9 315	19 150
Sulphur and pyrites						
Recovered (c)	tonnes (sulphur content)	145 000	154 000	162 000	163 000	163 000
Recovered (d)	tonnes (sulphur content)	25 000	30 000	30 000	40 000	45 000

Note(s):-

(1) In addition, the Philippines are believed to produce platinum group metals

(a) Including foundry sand and/or lumpy ore

(b) Sea salt

(c) From metal sulphide processing

(d) From petroleum refining and/or natural gas

Singapore

Despite its small size (the land area is less than 700 km²), Singapore is one of the world's most prosperous nations based on its key trading location. Although it has some petroleum refining and steel industries, it is better known for exports of manufactured goods.

Commodity	Units	2001	2002	2003	2004	2005
Crude steel	tonnes	456 000	545 000	561 000	610 000	572 000
Sulphur and pyrites						
Recovered (a)	tonnes (sulphur content)	230 000	180 000	180 000	215 000	250 000

Note(s):-

(a) From petroleum refining and/or natural gas

Taiwan

Taiwan has very limited mineral resources and therefore mining represented only 0.1 per cent of total industrial output value in 2005. However, the country is the world's fifth largest producer of crude steel.

Commodity	Units	2001	2002	2003	2004	2005
Feldspar	tonnes	147	—	510	900	—
Gypsum	tonnes	1 006	—	—	—	—
Pig iron	tonnes	10 001 000	10 169 000	10 260 000	10 354 000	...
Crude steel	tonnes	17 261 119	18 226 044	18 828 323	19 592 755	18 563 247
Ferro-alloys						
Ferro-silicon	tonnes	1 181	—	—	—	—
Kaolin	tonnes	28 921	18 403	22 448	35 001	9 423
Lead, refined	tonnes	40 000	40 000	40 000	40 000	40 000
Mica	tonnes	9 733	6 595	3 237	2 979	8 608
Crude petroleum	tonnes	44 380	51 106	45 760	44 563	32 389
Natural gas	million m ³	849	887	831	796	548
Salt	tonnes	252 555	247 895	178 826	159 091	114 389
Sulphur and pyrites						
Recovered	tonnes (sulphur content)	223 659	212 343	225 006	222 670	267 790
Talc	tonnes	130	27	466	410	—

Notes:

- (1) In addition, Taiwan is believed to produce a small quantity of gold.
- (2) Some ilmenite is converted to synthetic rutile in Taiwan.

Thailand

The mining and quarrying sector accounted for 2.3 per cent of the country's GDP in 2005 and the economy has experienced moderate growth for several years. Thailand is the world's fourth largest producer of feldspar and fifth largest producer of gypsum.

Commodity	Units	2001	2002	2003	2004	2005
Antimony, mine	tonnes (metal content)	50	13	46	61	415
Barytes	tonnes	23 559	137 469	115 600	211 278	115 000
Bentonite and fuller's earth						
Bentonite	tonnes	200	1 700	1 100	1 350	32 500
Coal						
Lignite	tonnes	19 616 996	19 601 984	18 843 395	20 059 845	20 878 176
Copper, refined	tonnes	—	—	—	20 000	26 100
Diatomite	tonnes	720	780	1 288	1 372	990
Feldspar	tonnes	710 543	783 733	824 990	1 001 053	1 149 717
Fluorspar	tonnes	3 020	2 270	2 360	2 375	295
Gold, mine	kilograms (metal content)	313	4 950	4 269	4 507	4 393
Gypsum						
Gypsum	tonnes	6 190 815	6 325 591	7 291 167	7 619 205	7 113 073
Anhydrite	tonnes	310 720	290 885	448 071	531 660	537 781
Iron ore	tonnes	50	570 110	9 675	135 580	230 946
Crude steel	tonnes	2 127 000	2 538 000	3 551 000	4 533 000	5 161 000
Kaolin (a)	tonnes	181 583	130 282	185 512	200 671	165 884
Lead, mine	tonnes (metal content)	300	2 600	—	—	—
Lead, refined	tonnes	30 000	43 000	45 300	57 500	61 200
Manganese ore	tonnes	45	—	—	4 550	88 500
Crude petroleum	tonnes	6 100 000	6 900 000	8 600 000	8 300 000	9 900 000
Natural gas	million m ³	19 611	20 450	21 299	22 317	23 676
Perlite	tonnes	9 915	7 600	5 700	26 400	14 500
Phosphate rock	tonnes	2 359	3 680	13 870	2 580	3 020
Salt						
Rock Salt	tonnes	852 565	908 968	892 243	1 031 200	1 074 214
Other Salt	tonnes	*100 000	*100 000	*100 000	*100 000	*100 000
Sulphur and pyrites						
Recovered (b)	tonnes (sulphur content)	46 000	46 000	46 000	90 000	114 000
Recovered (c)	tonnes (sulphur content)	195 000	170 000	170 000	200 000	230 000
Talc						
Talc	tonnes	6 838	1 702	8 501	12 592	10 270
Pyrophyllite	tonnes	59 602	103 496	73 556	108 691	177 684
Tin, mine	tonnes (metal content)	2 384	1 384	980	724	188
Tin, smelter	tonnes	22 387	17 500	15 200	20 800	29 400
Tungsten, mine (d)	tonnes (metal content)	92	53	390	337	622
Zinc, mine	tonnes (metal content)	8 866	15 188	14 830	19 948	20 381
Zinc, slab	tonnes	104 300	104 900	113 700	115 500	101 200

Note(s):-

(1) In addition, Thailand is believed to produce silver

(2) Thailand is also the major producer of tantalum bearing tin slags, but detailed information is not available

(a) Beneficiated

(b) From metal sulphide processing

(c) From petroleum refining and/or natural gas

(d) Wolframite and scheelite

Vietnam

Vietnam is progressing towards a more market-orientated economy and has experienced growth in GDP of around eight per cent in 2005 and 2006. Vietnam is one of the world's leading producers of anthracite coal and is an important regional producer of ilmenite.

Commodity	Units	2001	2002	2003	2004	2005
Bauxite	tonnes	20 000	*20 000	*20 000	*20 000	20 000
Barytes	tonnes	71 100	60 200	81 500	101 000	116 000
Bentonite and fuller's earth						
Bentonite	tonnes	...	...	...	...	20 000
Chromium ores and concentrates	tonnes	80 000	*80 000	*120 000	*150 000	90 000
Coal						
Anthracite	tonnes	13 000 000	16 347 000	19 590 000	27 330 000	32 800 000
Copper, mine	tonnes (metal content)	1 600	1 100	1 200	2 000	3 100
Diatomite	tonnes	...	...	...	...	10 000
Feldspar	tonnes	...	...	...	...	200 000
Fluorspar	tonnes	*3 000	*3 000	*3 000	*3 000	*3 000
Gold, mine	kilograms (metal content)	*3 000	*2 000	*2 000	*2 000	*3 000
Graphite	tonnes	...	...	...	...	2 000
Pig iron	tonnes	48 000	146 000	200 000	187 000	...
Crude steel	tonnes	318 780	408 196	543 006	658 467	656 734
Kaolin	tonnes	*600 000	*600 000	*650 000	*650 000	*650 000
Lead, mine	tonnes (metal content)	*900	*1 100	*1 100	*1 100	*1 200
Crude petroleum	tonnes	16 700 000	16 900 000	*17 600 000	20 800 000	19 100 000
Natural gas	million m ³	1 724	2 260	2 400	4 200	5 200
Phosphate rock	tonnes	683 000	787 800	823 400	901 800	910 000
Salt	tonnes	575 000	1 089 000	*1 275 000	*1 300 000	1 375 000
Talc						
Pyrophyllite	tonnes	...	...	...	...	5 000
Tin, mine	tonnes (metal content)	1 700	1 700	2 100	*3 500	*3 500
Tin, smelter	tonnes	1 700	1 700	2 100	3 500	3 500
Titanium minerals						
Ilmenite	tonnes	*170 000	*170 000	*220 000	*325 000	*360 000
Zinc, mine	tonnes (metal content)	43 000	44 000	50 000	40 000	48 000
Zirconium minerals (a)	tonnes	*8 000	*10 800	*21 300	*60 000	...

Note(s):-

(1) In addition, Vietnam is believed to produce rare earth minerals

(a) Conservative BGS estimates, based on exports