

# THE MINERAL INDUSTRIES OF

# AFRICA

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The 55 independent nations and other territories of continental Africa and adjacent islands covered in this volume were home to 800 million people and encompass a land area of 30.3 million square kilometers, which is more than three times the size of the United States. For many of these countries, mineral exploration and production constitute significant parts of their economies and remain keys to future economic growth. The continent is richly endowed with mineral reserves and ranks first or second in terms of concentration (20% to 89%) of world mineral reserves of bauxite, chromite, cobalt, diamond, gold, manganese, phosphate rock, platinum-group metals (PGM), titanium minerals (rutile and ilmenite), vanadium, vermiculite, and zirconium.

Although the continent attracted significant investment in mineral developments, particularly in the oil and gas sector, in 1999, widespread civil wars, internal ethnic or political conflicts, and refugee displacements continued to destabilize a number of African countries and constrained new investment in mineral exploration and development in many areas. Countries directly affected in 1999 included Algeria, Angola, Cameroon, the Republic of the Congo [Congo (Brazzaville)], the Democratic Republic of the Congo [Congo (Kinshasa)], Eritrea, Ethiopia, Guinea, Guinea-Bissau, Liberia, Nigeria, Rwanda, Sierra Leone, Somalia, Sudan, and Uganda. Negative economic impacts that resulted from the burden of military assistance provided to different sides of the civil war in Congo (Kinshasa) were also felt by Angola, Namibia, Rwanda, Uganda, and Zimbabwe.

The long-term implications of the AIDS epidemic on the workforce presents another disincentive to foreign investment and economic development in the region. A Joint United Nations Program on HIV/AIDS report highlighted the seriousness of the AIDS epidemic in Africa. In several southern African countries, from 20% to 25% of the working age population is infected (Joint United Nations Program on HIV/AIDS, June 2000, Report on the global HIV/AIDS epidemic, accessed July 22, 2000, at URL [http://www.unaids.org/epdemic\\_update/report/Epi\\_report.htm](http://www.unaids.org/epdemic_update/report/Epi_report.htm)). AIDS also was increasing operating costs to the mining sector in many countries where the social welfare and health-care costs of employees are absorbed by the mining companies.

International mineral exploration companies, in general, were cutting exploration expenditures, some down to the minimum required to hold leases. According to the Metals Economics Group (1999), exploration budgets for nonfuel minerals in Africa declined by 49% to \$323 million in 1998 from the peak exploration level of \$662 million in 1997; this was in line with the worldwide trend. The benefits of more than \$2.4 billion in mineral exploration expended in Africa between 1994 and 1999, however, were evident in the commitment of capital investment

for new mines, particularly for gold, during 1998 and 1999. In many instances, the successful junior exploration companies were being acquired by large mining companies, such as Anglo American plc, Ashanti Goldfields Corp., Ltd., Barrick Gold Inc., and Randgold Resources Ltd., that had the capital resources needed to progress to the development stage.

New gold mines started up or under construction during 1998 and 1999 included the Bibiani, the Damang, the Tarkwa open pit, and the Wassa Mines in Ghana, which added 34 metric tons (t) of new gold production; the Siguiri Mine in Guinea, which added 9.3 t of new gold production; the 12-metric-ton-per-year (t/yr) Angovia Mine in Côte d'Ivoire; the Morila, the Sadiola (1997 start-up), and the Syama expansion in Mali, which added 38.3 t of new gold production; and the Bulyanhulu, the Geita, and the Golden pride mines in Tanzania, which will add 33.5 t of new gold production by 2001. Collectively, based on a gold price of \$270 per troy ounce, these new developments will generate an additional \$1.1 billion per year of export revenues for these nations.

In South Africa, development work, which represented total investments of more than \$1.6 billion, continued on four new gold mines—AngloGold Ltd.'s Moab Khotsong and Western Deep Levels, South Deep, which was a joint venture between Western Areas Gold Mining Co. Ltd. and Placer Dome Inc. of Canada, and Avgold Ltd.'s Target. These four mines will add more than 53 t of gold to South Africa's gold mine capacity by 2003.

As the world's largest producer and the holder of the world's largest resources of PGM, South Africa was well positioned to capitalize on a sharp increase in platinum and palladium prices that resulted from a dramatic cutback in Russian PGM output and exports in 1999. Anglo American Platinum Corp., which produced 62,200 kilograms of PGM in 1999, announced plans during 1999 to increase production by 16,100 kilograms per year (kg/yr) of PGM and in May 2000 to increase production to nearly 109,000 kg/yr of PGM by 2006 (Anglo American Platinum Corp., May 16, 2000, Amplats announces expansion plans, accessed November 20, 2000, at URL <http://www.angloplatinum.com/media/media.htm>).

Announcements by other producers during 1999 highlighted expansions and new developments that will add an additional 17,300 kg/yr of PGM to South African production by 2003. In Zimbabwe, the Hartley platinum mine was closed in June 1999 after 3 years of troubled operations.

In Zambia, the Government successfully completed the privatization of the remaining assets of Zambian Consolidated Copper Company Limited (ZCCM). In December 1999, a consortium that was comprised of First Quantum Minerals Ltd. of Canada and Glencore International AG of Switzerland won its bid to acquire ZCCM's Mufalira Division and selected assets

of the Nkana Division (First Quantum Minerals Ltd., 1999). The agreement will give the First Quantum-Glencore consortium a 90% interest in the new operating company Mopani Copper Mines plc; ZCCM will retain a 10% interest. In October 1999, Zambia Copper Investments Ltd. (ZCI), which was owned by Anglo American, signed a Heads of Agreement with ZCCM to acquire the Konkola and the Nchanga Divisions. The agreement was finalized in March 2000 with the announcement that the new Anglo American company Konkola Copper Mines plc (KCM) would acquire the Konkola Division, which would include the Konkola Deep Mining Project; the Nchanga Division, which would include the Chingola refractory ore stockpiles; the Nampundwe pyrite mine; and associated infrastructure, which would include the Konkola, the Nampundwe, and the Nchanga concentrators and the Nchanga tailings leach plant. KCM will be owned by Anglo American (65%), ZCCM (20%), the International Finance Corp. (7.5%), and Commonwealth Development Corp. Financial Services (7.5%). KCM agreed to pay ZCCM \$90 million in acquisition payments plus copper and cobalt price participation bonus scheme to be capped at \$16 million per year and \$125 million during the life of the scheme. In addition, KCM committed to capital expenditures of \$260 million to rehabilitate the operations and, subject to financing and favorable copper markets, to develop the Konkola Deep Project at an estimated cost of \$523 million. In a parallel transaction, ZCI sold its 27.3% interest in ZCCM to the Government for \$30 million. KCM also had an option to buy the Nkana copper smelter (Anglo American plc, 1999, 2000). Details of the structure of the newly privatized mining industry are in table 2 of the Zambia chapter.

In southern Africa, Anglo American continued to consolidate its position in the lead-zinc industry following its 1998 acquisition of South African base-metals producer Black Mountain Mineral Development Co. (Pty.) Ltd. from Gold Fields of South Africa Ltd. and Phelps Dodge Corp. and its announcement of plans to invest \$700 million to develop the Gamsberg zinc mine, mill, and smelter project. The Gamsberg deposit in Northern Cape Province, South Africa, contains a resource of 90 million metric tons (Mt) at a grade of about 6.4% zinc [David McKay, Business Day Online (Johannesburg), September 8, 1998, Anglo to develop R4billion zinc mine, accessed September 9, 1998, at URL <http://www.bday.co.za/98/0908/news/news2.htm>). In 1999, Anglo American plc acquired Reunion Mining plc for \$82 million to take 100% ownership of the Skorpion zinc project, which is located in southwestern Namibia near the Rosh Pinah zinc mine. A feasibility study completed by Reunion estimated proven and probable reserves of open pittable ore to be 19.5 Mt at a grade of 10.1% zinc and anticipated average output during the first 6½ years of 150,000 t/yr of zinc metal. Capital costs are expected to be around \$450 million. Project implementation is expected to begin in 2000 with production of zinc planned to start in 2003 (Danchi, 1999). In Tunisia, Breakwater Resources Ltd. of Canada produced at the rate of 83,000 t/yr of zinc concentrates and 10,000 t/yr of lead concentrates at the Bougrine lead and zinc mine during its first full year of operations in 1999, after a 2-year closure. Metorex Ltd. was also examining the feasibility of developing the Perkooa zinc deposit in Burkina Faso.

Remote locations and high infrastructure development costs, among other factors, continued to delay development decisions on, for example, the nickel deposits in Burundi, Côte d'Ivoire, and Tanzania; an iron ore project in Guinea; and zinc and manganese deposits in Burkina Faso.

In 1999, following 40 years of mining and depletion of ore reserves at the Mounana uranium mine, uranium production ceased in Gabon. Policy changes and weak markets led to a significant cut back in uranium production in Niger.

Highlights of the diamond sector in 1999 included the expansion of the Orapa Mine in Botswana, which will double production to 12 million carats per year by 2000, and the success of marine diamond exploration and mining offshore of Namibia. In South Africa, De Beers Consolidated Mines Ltd. was adding a new diamond recovery plant at Kimberly and investigating the feasibility of an underground expansion of the Premier Mine to extend significantly the operating life of both mines. In Angola, renewed outbreak of the civil war was a setback to exploration and planned new diamond investments initiated in 1997 and 1998.

The flow of revenues from the illegal mining and smuggling of diamonds by União Nacional Para a Independência Total de Angola (UNITA) and by the Revolutionary United Front (RUF) in Sierra Leone used to support local civil wars, raised the concern of the international community and led to further United Nations (U.N.) sanctions aimed at controlling or ending the trade in so called "conflict diamonds." The United Nations Security Council has passed several resolutions addressing these sanctions.

In May 1999, Security Council Resolution 1237 (1999) expressed U.N. concern over continuing UNITA violation of the previous sanctions concerning arms and related material, petroleum, diamonds, and financial assets imposed against UNITA and reiterated the need for the U.N. Panel of Experts to be allowed to freely pursue its investigations into conflict diamonds and other issues in Angola (U.N. Security Council, May 7, 1999, Resolution 1237, accessed November 2, 2000, at URL <http://www.un.org/Docs/scres/1999/99sc1237.htm>).

In April 2000, Security Council Resolution 1295 (2000) expressed U.N. concern over continuing UNITA sanction violations and asked the U.N. Secretary General to establish a five-member panel of experts to conduct a 6-month investigation into sanction violations in Angola and to investigate other leads they may discover (U.N. Security Council, April 18, 2000, Resolution 1295, accessed November 2, 2000, at URL <http://www.un.org/Docs/scres/2000/res1295e.pdf>).

Security Council Resolution 1306 (2000) expressed U.N. concern over the role the mining and smuggling of illicit diamonds by the RUF played in fueling the conflict in Sierra Leone and at reports that such diamonds transit to such neighboring countries as Liberia and asked all states to work to prohibit the flow of rough diamonds from Sierra Leone into their territory. The U.N. also requested Sierra Leone to put in place a Certificate of Origin Program for the export of rough diamonds (U.N. Security Council, July 5, 2000, Resolution 1306, accessed November 2, 2000, at URL <http://www.un.org/Docs/scres/2000/res1306e.pdf>).

The U.N. has also published a fact sheet on the conflict

diamond situation in Africa, which explains the nature of the problem and international concerns and summarizes key U.N. and international community actions during the period 1998-2000 (United Nations, March 21, 2001, Conflict diamonds—War and sanctions, accessed March 30, 2001, at URL <http://www.un.org/peace/africa/Diamond.html>).

Investment in other major industrial projects in 1999 included the \$1.5 billion steel plant at Saldanha Bay, South Africa, which reached its full operating capacity of 1.2 million metric tons per year of hot-rolled steel coil during 1999. By early 2000 in Mozambique, more than \$6 billion in new mineral development projects were under consideration by Government and private foreign investors. Construction of the \$1.3 billion Mozal aluminum smelter near Maputo Harbor was well underway in 1999; completion was scheduled for late 2000. Development plans to date (1999) depended heavily on the energy potential of the underutilized Cabora Bassa hydroelectric dam; the Buzi, the Pande, and the Temane natural gas fields; the coal resources at Moatize; and modernization of the Indian Ocean export harbors at Beira, Maputo-Matola, and Nacala and associated transportation infrastructure. In the metals sector, studies were underway to determine the feasibility of developing a second aluminum smelter and major coal, iron, and titanium projects. In addition to the Moebase and the Moma-Congolone titanium heavy mineral sands projects in Mozambique, similar titanium projects at Kwale, Kenya, and near Richards Bay, South Africa, were at advanced stages of feasibility and development planning. The four titanium projects represented a potential investment of more than \$800 million between 2000 and 2005.

In the petroleum and natural gas sector, the U.S. Energy Information Administration reported exploration expenditures by 32 major oil companies in Africa for 1999 at \$1.27 billion and total exploration expenditures of \$5.33 billion from 1994 to 1999 (U.S. Energy Information Administration, November 8, 2000, Appendix B—Table B16—Exploration and development expenditures by region—1993-1999—Performance profile of major energy producers—1999, accessed December 20, 2000, at URL <http://www.eia.doe.gov/emeu/perfpro/btab16.html>). The boom has been stimulated by the opening of deepwater offshore blocks by African Governments, particularly in the deepwater basins of offshore west and central Africa, and by the development of new deepwater [300- to 2,000-meter (m)-deep] drilling and geophysical technologies by the petroleum industry. The industry has had major successes in offshore petroleum exploration in West Africa since 1996. These discoveries will significantly increase the role of Angola, Equatorial Guinea, and Nigeria as petroleum exporters and will have a major impact on their economies during the next 3 to 10 years.

In Angola alone, 25 deepwater fields were discovered from 1996 to mid-2000 (8 in 1999); reserves were estimated to be more than 8 billion barrels of oil equivalent (GBOE), of which two-thirds was oil. A June 2000 assessment by Douglas-Westwood Associates of the United Kingdom indicated that West Africa has close to 17 GBOE in recently discovered deepwater prospects. These include two giant world-class oilfields—TotalFinaElf's Girassol field in Angola and Shell's Bonga field in Nigeria. Capital investments to develop these resources will exceed \$5 billion per year by 2004 (OilOnline, August 14, 2000, Setting the West Africa scene, accessed

December 20, 2000, at URL [http://www.oilonline.com/news\\_spotlight\\_offshore\\_setting081400.html](http://www.oilonline.com/news_spotlight_offshore_setting081400.html)). The major companies involved in Angola, which included the state-owned Sociedade Nacional de Combustiveis de Angola, TotalFinaElf of France, Chevron Corp., ExxonMobil Angola Ltd., and Texaco Inc. of the United States, and BP-Amoco plc. of the United Kingdom, planned to invest more than \$18 billion between 2000 and 2003 to develop these petroleum resources. Angolan petroleum production was expected to increase from 800,000 barrels per day (bbl/d) in 1999 to more than 1 million barrels per day by 2002. Several billion dollars more will be spent to develop a new 150,000- to 200,000-bbl/d refinery, a liquified natural gas facility designed to liquify 5 billion cubic meters per year of gas, a new gas pipeline, and a gas-fueled thermal powerplant in Luanda (Africa Energy & Mining, 1999). Operating for the most part offshore or in the geographically sheltered Cabinda enclave, the oil companies in Angola have been able to avoid the war-related disruptions to operations faced by the land-based diamond mining companies. Kuito, which was the first of the deepwater oilfields (385-m-deep) in Angola, was brought into production by Chevron in late 1999; full capacity of the \$400 million 100,000-bbl/d floating production storage and offloading vessel (FPSO) was expected to be reached in early 2000 (OilOnline, November 2, 1999, Kuito kicks off for Angola, accessed January 20, 2001, at URL [http://www.oilonline.com/news\\_spotlight\\_offshore\\_kuito110299.html](http://www.oilonline.com/news_spotlight_offshore_kuito110299.html)).

Girassol, which was the second deepwater oilfield (more than 1,100 m) in Angola, was being developed by a consortium led by TotalFinaElf at a capital cost of \$3 billion. The Girassol FPSO will produce its first oil in late 2000; full capacity of 200,000 bbl/d was expected during 2001. Other partners with TotalFinaElf (40%) included BP Exploration Angola Ltd. (16.67%), Den Norske State Oljeselskap a.s. (13.33%), and Norsk Hydro ASA (10%) (Alexander's Gas and Oil Connections, October 13, 1998, Angolan Girassol oilfield to produce 200,000 bpd by 2001, accessed July 12, 1999, at <http://www.gasandoil.com/goc/company/cna84230.htm>).

During 1999, ExxonMobil Corp. conducted a feasibility study on the Chad-Cameroon Oil Development and Pipeline Project in west-central Africa in conjunction with its partners Petronas Group of Malaysia and Chevron Corp. The project will develop landlocked oilfields in southern Chad and transport the crude oil about 715 kilometers (km) by buried underground pipeline to the coast of Cameroon for export. The project will cost an estimated \$3.5 billion to construct and will produce about 225,000 bbl/d. The project is expected to produce 1 billion barrels of oil during its 30-year life (ExxonMobil Corp., October 18, 2000, ExxonMobil affiliate commences major African development project, accessed November 2, 2000, at URL [http://www.exxon.mobil.com/em\\_newsrelease](http://www.exxon.mobil.com/em_newsrelease)).

In a major example of regional cooperation and sound economic planning, efforts were underway to use Nigerian natural gas that was currently (1999) being flared to help solve the long-term energy needs of its neighboring states of Benin, Ghana, and Togo. By using Nigeria's more than 40 trillion cubic feet of natural gas reserves, a consortium led by Chevron Nigeria Limited was able to commit to building the West African gas pipeline by 2002. The \$400 million project will

involve the construction of an 800 km offshore gas pipeline from the Niger Delta to the west coast city of Effuasi, Ghana. The pipeline will supply an initial amount of 120 million cubic feet per day of gas to existing and planned powerplants in Benin, Ghana, and Togo. Cooperators in the West African gas pipeline project included Nigerian National Petroleum Corporation, Ghana National Petroleum Corporation, Shell Petroleum Development Company, Société Togolese de Gaz, and SA Société Béninoise de Gaz (Chevron Nigeria Ltd., August 16, 1999, Chevron named project manager for West African gas pipeline project, via URL <http://www.chevron.com/newsvs/frame.html>).

In Namibia, the Government has been pushing the approval of the \$1 billion Kudu gas development plan to pipe natural gas 700 km from the Kudu Oil Fields off the coast of Namibia to the Western Cape, South Africa, where it would be used in a gas-fired power station. Shell Exploration and Production Namibia, which was the principal operator of the Kudu gas project, has been evaluating costs, partners, and markets for several years with a 2005 project date the current (1999) target (U.S. Department of Commerce-National Trade Data Bank, August 18, 1999, Namibia—Gas fields project, accessed January 15, 2001, at URL <http://www.tradeport.org/ts/countries/namibia/mrr/mark0007.html>).

In other regional oil and gas developments, BP Amoco and Sonatrach, which is the Algerian national oil company, were

investing more than \$3 billion to develop the Amenas and the Salah gasfields in Algeria; Triton Energy Ltd. was developing the Ceiba oilfield in Equatorial Guinea; Sudan commissioned a new 10,000-bbl/d oil refinery and a \$1 billion oil pipeline to export oil from Hagleig to the Red Sea port of Beshair; Soekor E and P (Pty.) Ltd. started production at the Oribi oilfield, which was the second oilfield in South Africa; and Tanzania continued with plans with Ocelot International of Canada to develop its Songo-Songo gasfield.

## References Cited

- African Energy & Mining, 1999, Angola: African Energy & Mining, no. 262, October 27, p. 3.
- Anglo American plc, 1999, ZCCM agreements signed today: Anglo American plc press release, December 15, 1 p.
- 2000, Privatisation of Zambian copper mines completed: Anglo American plc press release, March 31, 2 p.
- Danchi, Bobby, 1999, Address to Australian African Mining Conference, Perth, Australia, November 16, 1999: Anglo American plc press release, November 11, 5 p.
- First Quantum Minerals Ltd., 1999, First Quantum and Glencore consortium in negotiations to acquire Zambia Consolidated Copper Mines Mufalira Division and Nkana Division: First Quantum Minerals Ltd. press release, December 20, 1 p.
- Metals Economics Group, 1999, Overview of worldwide exploration budgets, *in* Metals Economics Group strategic report: Halifax, Nova Scotia, Canada, Metals Economics Group, September-October, p. 1-5.

TABLE 1  
AFRICA: PRODUCTION OF SELECTED MINERAL COMMODITIES, 1999 1/

(Thousand metric tons gross weight unless otherwise specified)

Country	Aluminum	Bauxite	Cement e/	Chromite	Coal, anthracite and bitu- minous	Cobalt, mine Co content (metric tons)
Algeria	--	--	7,500	--	--	--
Angola	--	--	350 2/	--	--	--
Benin	--	--	450	--	--	--
Botswana	--	--	--	--	900 e/	329 2/
Burkina Faso	--	--	50	--	--	--
Burundi	--	--	--	--	--	--
Cameroon	85	--	450	--	--	--
Central African Republic	--	--	--	--	--	--
Congo (Brazzaville)	--	--	10	--	--	--
Congo (Kinshasa)	--	--	158	--	--	1,000
Cote d'Ivoire	--	--	650	--	--	--
Egypt	193 2/	--	22,000 2/	--	400 e/	--
Equatorial Guinea	--	--	--	--	--	--
Eritrea	--	--	45	--	--	--
Ethiopia	--	--	700	--	--	--
Gabon	--	--	175	--	--	--
Ghana	104 2/	353	1,870	--	--	--
Guinea	--	15,000	--	--	--	--
Kenya	2	--	1,200	--	--	--
Liberia	--	--	15	--	--	--
Libya	--	--	3,000	--	--	--
Madagascar	--	--	120	100	--	--
Malawi	--	--	175	--	54	--
Mali	--	--	10	--	--	--
Mauritania	--	--	50	--	--	--
Morocco	--	--	7,200	--	129	950
Mozambique	--	6	390	--	100	--
Namibia	--	--	--	--	--	--
Niger	--	--	30	--	135	--
Nigeria	16	--	2,500	--	30 e/	--
Rwanda	--	--	66	--	--	--
Senegal	--	--	1,000	--	--	--
Sierra Leone	--	--	100	--	--	--
Somalia	--	--	--	--	--	--
South Africa	689 2/	--	8,900 2/	6,817	223,471	450
Sudan	--	--	350	10 e/	--	--
Swaziland	--	--	--	--	400	--
Tanzania	--	--	1,200	--	35	--
Togo	--	--	560	--	--	--
Tunisia	--	--	4,864 2/	--	--	--
Uganda	--	--	210	--	--	--
Zambia	--	--	300	--	100	4,236
Zimbabwe	--	--	1,000	641	4,977	129
Total, Africa 3/	1,090	15,400	67,600	7,600	230,700	7,100
Total, world	23,100	127,000	1,606,000	14,000	4,297,062	29,900
Share of world total	5%	12%	4%	54%	5%	24%
United States	3,779	NA	87,777	--	997,120	--

See footnotes at end of table.

TABLE 1--Continued  
AFRICA: PRODUCTION OF SELECTED MINERAL COMMODITIES, 1999 1/

(Thousand metric tons gross weight unless otherwise specified)

Country	Copper, mine Cu contents	Diamond (thousand carats) e/ 4/	Gold e/ (kilograms)	Graphite	Iron ore	Lead, mine Pb content (metric tons)
Algeria	--	--	--	--	1,336	1,215
Angola	--	4,096 2/	--	--	--	--
Benin	--	--	500	--	--	--
Botswana	22	21,348 2/	1	--	--	--
Burkina Faso	--	--	886 2/	--	--	--
Burundi	--	--	5	--	--	--
Cameroon	--	--	1,000	--	--	--
Central African Republic	--	550	100	--	--	--
Congo (Brazzaville)	--	--	10	--	--	--
Congo (Kinshasa)	36	20,116	207	--	--	--
Cote d'Ivoire	--	310	2,628 2/	--	--	--
Egypt	--	--	--	--	3,000	--
Equatorial Guinea	--	--	--	--	--	--
Eritrea	--	--	500	--	--	--
Ethiopia	--	--	2,000	--	--	--
Gabon	--	500	70	--	--	--
Ghana	--	648 2/	81,594 2/	--	--	--
Guinea	--	400	13,300	--	--	--
Kenya	--	--	990	--	--	--
Liberia	--	500	1,000	--	--	--
Libya	--	--	--	--	--	--
Madagascar	--	--	50	13	--	--
Malawi	--	--	--	--	--	--
Mali	--	--	23,688 2/	--	--	--
Mauritania	--	--	--	--	11,500	--
Morocco	5 e/	--	380	--	4	79,798
Mozambique	--	--	17 2/	2	--	--
Namibia	--	1,557 2/	2,008 2/	--	--	9,361
Niger	--	--	1,000	--	--	--
Nigeria	--	--	10	--	--	--
Rwanda	--	--	10	--	--	--
Senegal	--	--	--	--	--	--
Sierra Leone	--	500	30	--	--	--
Somalia	--	--	--	--	--	--
South Africa	144	10,022 2/	451,300 2/	--	29,512	80,191
Sudan	--	--	6,000	--	--	--
Swaziland	--	--	--	--	--	--
Tanzania	--	120	7,000	--	--	--
Togo	--	--	--	--	--	--
Tunisia	--	--	--	--	222	6,589
Uganda	--	--	2,500	--	300	--
Zambia	260 e/	--	700	--	--	--
Zimbabwe	5 e/	45 2/	27,666 2/	12	599	--
Total 3/	472	60,700	627,000	27	46,500	177,154
Total, world	12,600	112,000	2,540,000	685	994,000	3,020,000
Share of world total	4%	54%	25%	4%	5%	6%
United States	1,600	4 e/	341,000	--	57,800	520,000

See footnotes at end of table.

TABLE 1--Continued  
AFRICA: PRODUCTION OF SELECTED MINERAL COMMODITIES, 1999 1/

(Thousand metric tons gross weight unless otherwise specified)

Country	Manganese ore	Petroleum, crude (thousand barrels)	Phosphate rock e/ (gross weight)	Steel, crude e/	Uranium, concentrate U <sub>3</sub> O <sub>8</sub> 4/ (metric tons)	Zinc, mine Zn content (metric tons)
Algeria	--	438,840	1,096 2/	400	--	9,808
Angola	--	270,000	--	--	--	--
Benin	--	--	--	--	--	--
Botswana	--	--	--	--	--	--
Burkina Faso	--	--	--	--	--	--
Burundi	--	--	--	--	--	--
Cameroon	--	37,000	--	--	--	--
Central African Republic	--	--	--	--	--	--
Congo-Brazzaville	--	93,951	--	--	--	--
Congo-Kinshasa	--	8,650	--	--	--	--
Cote d'Ivoire	--	10,000 e/	--	--	--	--
Egypt	30	311,000	1,018 2/	2,619 2/	--	--
Equatorial Guinea	--	37,000	--	--	--	--
Eritrea	--	--	--	--	--	--
Ethiopia	--	--	--	--	--	--
Gabon	2,092	124,500	--	--	347	--
Ghana	541	2,190	--	75	--	--
Guinea	--	--	--	--	--	--
Kenya	--	--	--	25	--	--
Liberia	--	--	--	--	--	--
Libya	--	481,000	--	945	--	--
Madagascar	--	--	--	--	--	--
Malawi	--	--	--	--	--	--
Mali	--	--	--	--	--	--
Mauritania	--	--	--	--	--	--
Morocco	29	35	22,767 2/ 5/	5	--	111,703
Mozambique	--	--	--	--	--	--
Namibia	--	--	--	--	3,171	34,639
Niger	--	--	--	--	3,441	--
Nigeria	--	777,000	--	--	--	--
Rwanda	--	--	--	--	--	--
Senegal	--	1 e/	1,820	--	--	--
Sierra Leone	--	--	--	--	--	--
Somalia	--	--	--	--	--	--
South Africa	3,122	5,493	2,900	7,300	1,093	69,733
Sudan	--	17,000	--	--	--	--
Swaziland	--	--	--	--	--	--
Tanzania	--	--	--	--	--	--
Togo	--	--	1,700	--	--	--
Tunisia	--	30,960	8,006 2/	229 2/	--	49,066
Uganda	--	--	--	15	--	--
Zambia	--	--	--	--	--	--
Zimbabwe	--	--	90	228	--	--
Total 3/	5,814	2,644,620	39,397	11,841	8,052	274,949
Total, world	20,189	28,346,995	141,000	786,000	36,643	8,040,000
Share of world total	29%	9%	28%	2%	22%	3%
United States	--	2,959,055	40,600	97,400	2,130	843,000

e/ Estimated. NA Not available. --Zero.

1/ Data may be different from that appearing in individual country production tables owing to availability of more current data. Table includes data available through March 1, 2001.

2/ Reported figure.

3/ May not add to totals shown because of independent rounding.

4/ Source: The Uranium Institute, London, England, written commun., 1999.

5/ Includes production from Western Sahara.