

AFRICA

By George J. Coakley, Philip M. Mobbs, Philip A. Szczesniak, David R. Wilburn, and Thomas R. Yager

The 55 independent nations and other territories of continental Africa and adjacent islands that are covered in this volume encompass a land area of 30.3 million square kilometers, which is more than three times the size of the United States, and were home to 788.5 million people in 2000. For many of these countries, mineral exploration and production constitute significant parts of their economies and remain keys to future economic growth. Africa is richly endowed with mineral reserves and ranks first or second in terms of amount of world reserves of bauxite, chromite, cobalt, diamond, gold, manganese, phosphate rock, platinum-group metals (PGM), titanium minerals (rutile and ilmenite), vanadium, vermiculite, and zirconium.

General Economic Conditions

In 2000, according to the International Monetary Fund (2001, p. 195), the gross domestic product (GDP) of Africa grew by 2.8% after growing by 2.5% in 1999. From 1995 to 2000, African GDP growth averaged 3.4% per year. During the same period, population growth averaged 2.4% per year. The increase in petroleum prices for non-oil-producing countries and the decrease in many nonfuel commodities prices had an adverse effect upon the economies of numerous African countries; Ghana, Zambia, Mali, Madagascar, Chad, and Ethiopia were the most heavily affected countries in 2000.

In 2001, according to projections by the International Monetary Fund (2001, p. 2, 44, 262), the region's real GDP was expected to increase by 3.8%; in 2002, by 4.4%; and in 2003 to 2006, by an average of 5.1% per year. The projected improvement in GDP growth was based on factors that included better weather conditions (which would aid agricultural output) and the reduction of civil conflict in several regions. In Algeria, growth was expected to be 3.8% in 2001 and 4.9% in 2002. Côte d'Ivoire was projected to have -1% GDP growth in 2001 and 3.5% in 2002. Nigeria's economic growth was expected to be 3.1% in 2001 and 2.2% in 2002. Tanzania was projected to have 5.9% growth in 2001 and 6.2% in 2002.

Investment Interest and Political Risk

A review of company investment plans for the period 2000 to 2007 indicated the potential for the region to attract more than \$44 billion in oil and gas developments, primarily in Angola and Nigeria. More than \$26 billion in mining and mineral processing projects, which included nonferrous metals investments of \$9.55 billion; ferrous metals, \$4.82 billion; gold, \$4.55 billion; and PGM, \$3.7 billion, were planned (table 17). The mining and mineral processing projects were chiefly in South Africa, Mozambique, and Zambia. Most of the identified projects were at least at the engineering feasibility

stage, but some were still awaiting favorable commodity market conditions or the arrangement of project financing. South African investment abroad continued to accelerate, with some of the smaller South African companies, such as Durban Roodeport Deep Ltd., making their debut on the international scene by investing in gold mining in Australia.

During 2000, the Government of Zambia completed the privatization of its copper industry that began in the mid-1990s. Other privatization of state-owned industries included cement plants in Sudan and Tunisia and electricity companies in Rwanda and Togo.

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 2000 included Algeria, Angola, Cameroon, Congo (Brazzaville), Congo (Kinshasa), Eritrea, Ethiopia, Guinea, Guinea-Bissau, Liberia, Nigeria, Rwanda, Sierra Leone, Somalia, Sudan, and Uganda. Angola, Namibia, Rwanda, Uganda, and Zimbabwe were affected by the burden of providing military assistance in the civil war in Congo (Kinshasa). In the Côte d'Ivoire, despite the continuing civil unrest that began in December 1999, the Government announced intentions to privatize 26 state-owned companies. The end of the war between Ethiopia and Eritrea in June 2000 gave hope for increased stability and an improved investment climate in that region.

Legislation

Efforts to revise mining legislation were undertaken during 2000 by the Governments of Algeria, the Central African Republic, Congo (Kinshasa), Gabon, Madagascar, Mali, Mauritania, Namibia, South Africa, and Tanzania. The draft of a law to reform the Algerian mining code to "end discrimination between local and foreign investors" was approved (Mining Journal, 2000a). In the Central African Republic, the World Bank helped prepare new mining legislation as part of a \$20 million loan package. World Bank and International Monetary Fund (IMF) officials hoped for the passage of legislation that bars the Government from directly involving itself in mining ventures and that authorizes the sale of oil and gas licenses by auction in accordance with the Treaty for Harmonization of African Business Laws (also known as the OHADA Treaty, which was signed in 1993). A new Mining Code designed to lighten the tax burden in mining investment was adopted by the Gabonese Parliament (Mining Journal, 2000b). In Madagascar, mining regulations were overhauled, and the Bureau du Cadastre Minier de Madagascar was established to serve as a one-stop service for exploration and mine permitting. The Government of Mali revised the country's Mining Code,

modified taxation and mine permitting provisions, and set up a new regional mining office in the western part of the country, nearer to the main mining areas.

In Namibia, the Diamond Act No. 13 of 1999 became effective April 1, 2000. This legislation, which included provisions for exploration and mining of offshore diamonds, regulated security procedures used in the mining, prospecting, selling, and exporting of diamonds. The South African Code for Reporting of Mineral Resources and Mineral Reserves, which was an attempt to set rules and guidelines for the reporting of mineral reserves/resources, was finalized after 2½ years of deliberations. Development of a new mineral policy for South Africa, which was designed to free up unused mineral rights which would be made available to new foreign investors or new local black economic empowerment groups, was under full consideration.

Exploration

International mineral exploration companies continued to cut back on exploration budgets, some down to the minimum required to hold leases. According to data gathered by the U.S. Geological Survey (USGS) and the Metals Economics Group (2000) of Halifax, Nova Scotia, Canada, the decline in exploration activity in Africa continued. The Metals Economics Group reported that Africa accounted for the second largest decline in budgeted exploration expenditure and the largest decline in spending share to \$293 million (12.6 %) in 2000 from \$377 million (14.7% of world budget) in 1999 and by 66% from the peak exploration expenditure level of \$662 million in 1997; this decline in exploration spending was in line with the worldwide trend. Reasons for the decline include weak commodity prices, delayed implementation of policy reforms, and increased political instability (Weeks, 2000). Renewed outbreaks of civil war seriously interrupted mineral exploration and development in Angola, Congo (Kinshasa), and Sierra Leone. These conflicts also adversely affected the economies of neighboring countries. Côte d'Ivoire and Zimbabwe experienced an increase in political tension, which resulted in a less attractive venue for foreign investment.

A survey of major American petroleum companies compiled by the U.S. Energy Information Administration reported that their oil and natural gas exploration expenditure in Africa for 1999 (the last year for which data is available) was \$1.268 billion, which was a 16% increase compared with that of 1998. Total hydrocarbon exploration expenditure in Africa compiled for the period from 1994 through 1999 was more than \$5.3 billion (Davis and others, 2001, p. 94). Actual exploration expenditure was higher, because the survey excluded a number of multinational companies active in Africa.

The petroleum exploration boom focused on offshore western Africa has been stimulated by increased oil company interest in deepwater hydrocarbon plays and acceptance of the associated risk, by new geophysical technologies, by the development of deepwater drilling techniques, and by the opening of deepwater blocks by African governments. A June 2000 assessment by industry analysts Douglas-Westwood Associates indicated that western Africa has close to 17 billion barrels of oil equivalent in deepwater prospects; this included TotalFinaElf S.A.'s

Girassol Field in Angola and Shell Petroleum Development Company of Nigeria Ltd.'s Bonga prospect in Nigeria (Knight and Westwood, 2001). Proposed annual capital investments to develop these resources were planned to exceed \$5 billion by 2004.

Additionally, the Mauritanian Ministry of Mines has appointed the South African Council for Geoscience to conduct a 5-year \$16.5 million program to update and generate geological information. The Africa Development Fund approved a \$32 million loan for infrastructure development in Mali.

Commodity Review

The following section includes a review of production, consumption, and discussions of potential developments for individual commodities. The continent accounted for a significant portion of total world output for a number of mineral commodities. Africa's severe poverty, however, limited its capacity as a domestic market for mineral commodities. The commodity outlook segments are based upon projected trends that would affect current (2001) producing facilities and planned new facility capacities that the operating companies, consortia, or governments have projected to come online within the indicated timeframes. Projects that have received approval from a company's board of directors would be typical of projects that could have a chance of being implemented within the indicated timeframes. As such, projects listed in the following outlook sections are presented as an indication of current (2001) industry plans and are not a USGS prediction of what will occur.

Metals

Bauxite, Alumina, and Aluminum.—Production.—In 2000, Africa's production of bauxite was estimated to have increased slightly to 15.5 million metric tons (Mt), which represented about 11% of world production. Guinea remained the largest producer in Africa and the second largest bauxite-producing country in the world with output of about 15 Mt (Plunkert, 2002). Guinea was the only producer of alumina in Africa; its production was estimated to have increased by 10% in 2000. The country's estimated output of 550,000 metric tons (t) amounted to about 1% of global alumina production.

Africa's production of aluminum increased 6.7% to 1.17 Mt. This represents 5% of world production. Much of the increase was attributed to the partial return to traditional levels of production in Ghana. South Africa, which produced 58% of Africa's aluminum, remained the largest producer. The major development in this sector in Africa for 2000 was the commissioning of Billiton plc's \$1.3 billion Mozal aluminum smelter near Maputo, Mozambique. Mozal, which had the capacity to produce 253,000 metric tons per year (t/yr) of aluminum, produced about 54,000 t of aluminum from July to December 2000.

Consumption.—Africa's share of the world's aluminum consumption in 2000 was 1%. Continental consumption reportedly rose to 327,900 t of aluminum in 2000 from 264,200 t in 1999. South Africa accounted for 57% and Egypt accounted for 25% of African aluminum consumption (World Bureau of Metal Statistics, 2001, p. 9).

TABLE 1
AFRICA: HISTORIC AND PROJECTED ALUMINUM PRODUCTION, 1990-2005 1/

(Thousand metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Cameroon	93	79	92	95	90	90	90
Egypt	179	180	193	200	200	200	200
Ghana	174	135	104	142	160	200	200
Kenya	--	2	2	2	2	2	2
Mozambique	--	--	--	54	250	500	500
Nigeria	--	--	16	--	--	--	190
South Africa	159	229	689	676	675	675	825
Total	605	625	1,100	1,200	1,400	1,700	2,000

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

Outlook.—Bauxite production is likely to show little change in 2001. Guinea's production of bauxite is expected to increase to 15.7 Mt in 2001 and to 16 Mt in 2003. Ghana, which produces abrasive-grade bauxite, is expected to increase its production to 700,000 t in 2001 and to 1 Mt in 2003.

In 2001, aluminum production is expected to increase by 20% to 1.4 Mt compared with production of 1.169 Mt in 2000. In 2005, aluminum production could reach 2 Mt. Table 1 lists projected aluminum production from African countries through 2005. The increased production is expected to come from the opening and proposed expansion of the Mozal smelter in Mozambique, the expansion of Hillside smelter in South Africa, full production from the Tema smelter in Ghana, and the reopening the Aluminium Smelter Co. of Nigeria Ltd. plant. The Mozal smelter in Mozambique is expected to lead an increase in African aluminum production; its output is expected to increase to about 250,000 t in 2001 from 53,800 t in 2000 (World Bureau of Metal Statistics, 2001, p. 6, 8-9). Billiton plc has announced plans to begin a feasibility study on doubling Mozal's capacity to 506,000 t/yr by 2003.

Chromite. The gross weight of Africa's production of chromite decreased by 1.6% to 7.478 Mt, which represented 52% of world production. South Africa produced 88.6% of Africa's chromite; its output declined to 6.621 Mt in 2000 from 6.817 Mt in 1999. Other African producers included Madagascar, Sudan, and Zimbabwe.

Copper and Cobalt.—Production.—In 2000, Africa's production of copper decreased by 6.4% to 465,000 t, which was about 4% of the world's total copper production, compared with 1969 when Africa had produced 1.38 Mt of copper, which then was about 24% of the total world copper production. Reduced production from the Congo (Kinshasa) and Zambia

accounted for most of the significant declines in African copper production. The copper content of ore produced by Congo (Kinshasa) fell to 21,000 t in 2000 compared with 357,000 t of copper in ore in 1969. Zambia produced 241,000 t of copper in ore in 2000 compared with a copper content of 825,000 t in mine output in 1969.

In 2000, the privatization of Zambian Consolidated Copper Mines (ZCCM) was completed. The newly reorganized copper industry consists of two large private companies—Mopani Copper Mines Plc. (Mopani) and Konkola Copper Mines Plc. (Konkola)—and several smaller companies. Mopani purchased ZCCM's Mufulira Division and the Nkana Division's mining operation, concentrator, and cobalt plant. Konkola acquired the Konkola and the Nchanga Divisions of ZCCM, the Konkola deep mining project, the Chingola refractory copper ore stockpiles, the Nampundwe pyrite mine, the Konkola concentrator, the Nampundwe concentrator, and the Nchanga concentrator. The reorganized copper industry has committed \$720 million toward the rehabilitation of mines and plants, subject to completion of favorable feasibility studies, and has proposed to invest an additional \$1.1 billion for new mine developments by 2008. Production declined by more than 7% to 241,000 t in 2000 while rehabilitation work was underway.

In Congo (Kinshasa), the ongoing civil war continued to suspend most work on the rehabilitation of the La Générale des Carrières et de Mines (Gecamines) copper-cobalt production facilities or the development of new producing capacity. Offsite project engineering and feasibility studies were continuing. In Namibia, the Haib low-grade copper project was put on hold, and the smelter and mines of the former Tsumeb Copper Ltd. (TCL) reopened under new ownership.

In South Africa, Palabora Mining Company Ltd. began to

TABLE 2
AFRICA: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 1990-2005 1/

(Thousand metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Botswana	25	25	38	38	20	20	20
Congo (Kinshasa)	509	29	32	21	20	70	90
Morocco	16	14	8	7	(2/)	(2/)	(2/)
Namibia	28	23	--	19	25	30	40
South Africa	179	166	144	137	85	85	95
Zambia	519	316	270	241	300	450	450
Zimbabwe	14	9	5	2	(2/)	(2/)	(2/)
Undistributed	--	--	--	--	10	10	10
Total	1,290	582	497	465	460	670	710

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Included in "Undistributed."

transition from an 80,000-metric-ton-per-day (t/d) open pit mine to a 30,000-t/d underground mine.

Africa's production of cobalt more than doubled to 14,341 t in 2000 from 7,100 t in 1999. This represented 43% of the world total. Congo (Kinshasa) produced 7,000 t, or nearly 50% of Africa's cobalt; this was 600% more than Congo's (Kinshasa) production in 1999. Zambia was the second leading cobalt producer in Africa in 2000 with 4,600 t, or 32% of Africa's cobalt.

Consumption.—African consumption of copper rose to 125,500 t in 2000 compared with 110,200 t in 1999. In 2000, Africa's share of the world's copper consumption was less than 1%. South Africa, which was the dominant consumer of base metals in Africa, accounted for 61% of African copper consumption; Egypt, for 15% (World Bureau of Metal Statistics, 2001, p. 41).

Outlook.—Mine production is projected to increase through 2005, with rising output from Congo (Kinshasa), Namibia, South Africa, and Zambia more than offsetting falling output from Morocco (World Bureau of Metal Statistics, 2001, p. 37). In 2001, Zambia's copper mine production is expected to be 300,000 t; and in 2003, it is expected to reach 450,000 t. Refined copper output also is expected to increase.

Gold.—Production.—In 2000, Africa produced 604,543 kilograms (kg) of gold, or 24% of the world total; this represented a more than 4.5% decline from 1999. South Africa

produced 430,778 kg, or 72% of Africa's gold; this was 4.5% less than South Africa's production in 1999.

Ghana was Africa's second largest producer; it produced 72,080 kg in 2000, which was a decline from its 1999 production of 79,946 kg. Gold production also declined in Zimbabwe. In 2000, gold production increased in Burkina Faso, Côte d'Ivoire, Ethiopia, Mali, Namibia, and Tanzania.

Outlook.—In 2001, the continuing three-decade-long decline in South African gold production will be at least partially offset by output from new mines in Mali and Tanzania. By 2007, gold production in South Africa is expected to decline to 420 t. Production in Ghana, Tanzania, Mali, and Guinea is projected to reach 62 t, 53 t, 50 t, and 19 t, respectively.

Numerous gold mines started up or were under construction in 2000. In Tanzania, the Bulyanhulu, the Geita, and the North Mara mines were expected to increase production by 34 t/yr by 2004; the Morila and the Yatela Mines in Mali, by more than 14 t/yr; the Samiri Hill Mine in Niger, by 4.7 t/yr; the Jean-Gobelet Mine in Guinea, by 1.9 t/yr; and the Tirek Mine in Algeria, by 1.2 t/yr. In South Africa, development work continued on AngloGold Ltd.'s Moab Khotsong and Western Deep Levels Mines; the South Deeps Mine (a joint venture between Western Areas Gold Mining Co. Ltd. and Placer Dome Inc. of Canada); and the Target Mine of Avgold Ltd. These four mines represent capital investments of \$2 billion and will add more than 53 t of gold to South Africa's gold mine capacity by 2003.

TABLE 3
AFRICA: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 1990-2007 1/

(Kilograms)

Country	1990	1995	2000	2007 e/
Benin	--	300	500	(2/)
Botswana	46	86	4	(2/)
Burkina Faso	7,800	1,319	1,000	(2/)
Burundi	9	2,000	1,500	(2/)
Cameroon	10	800	1,000	(2/)
Central African Republic	241	97	100	(2/)
Chad	--	--	120	(2/)
Congo (Brazzaville)	7	10	10	(2/)
Congo (Kinshasa)	9,300	1,180	52	(2/)
Cote d'Ivoire	20	1,983	3,154	(2/)
Eritrea	--	59	500	(2/)
Ethiopia	848	4,500	5,177	(2/)
Gabon	80	70	70	(2/)
Ghana	16,800	53,087	72,080	62,000
Guinea	6,340	7,863	13,300	19,000
Kenya	25	170	990	(2/)
Liberia	600	800	1,000	(2/)
Madagascar	216	38	9	(2/)
Mali	5,200	3,996	25,000	50,000
Mauritania	--	1,196	--	(2/)
Morocco	500	580	334	(2/)
Mozambique	63	6,800	23	(2/)
Namibia	1,610	2,394	2,456	(2/)
Niger	--	1,000	1,000	(2/)
Nigeria	--	5	10	(2/)
Rwanda	2,160	26	10	(2/)
Senegal	--	--	550	(2/)
Sierra Leone	32	4	30	(2/)
South Africa	605,000	523,809	430,778	420,000
Sudan	100	3,700	6,000	(2/)
Tanzania	3,500	320	15,060	53,000
Uganda	--	1,506	56	(2/)
Zambia	129	91	600	(2/)
Zimbabwe	16,900	23,959	22,070	(2/)
Undistributed	--	--	--	40,000
Total	678,000	644,000	605,000	600,000

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Included in "Undistributed."

TABLE 4
AFRICA: HISTORIC AND PROJECTED IRON ORE MINE PRODUCTION, 1990-2005 1/

(Thousand metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Algeria	2,940	2,200	1,336	1,645	(2/)	(2/)	(2/)
Egypt	2,410	2,043	3,000	2,500	(2/)	(2/)	(2/)
Mauritania	11,600	11,610	10,401	10,400	10,400	10,000	10,000
Morocco	148	47	7	6	(2/)	(2/)	(2/)
Nigeria	374	168	--	--	(2/)	(2/)	(2/)
South Africa	30,300	31,946	29,512	33,707	35,000	38,000	38,000
Tanzania	--	43	--	--	(2/)	(2/)	(2/)
Tunisia	291	224	219	182	(2/)	(2/)	(2/)
Uganda	--	--	3	5	(2/)	(2/)	(2/)
Zimbabwe	1,260	311	599	451	(2/)	(2/)	(2/)
Undistributed	--	--	--	--	4,500	4,500	4,500
Total	49,000	49,000	45,000	49,000	50,000	53,000	53,000

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Included in "Undistributed."

TABLE 5
AFRICA: HISTORIC AND PROJECTED STEEL PRODUCTION, 1990-2005 1/

(Thousand metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Algeria	836	827	758	842	700	800	900
Benin	8	--	--	--	(2/)	(2/)	(2/)
Egypt	2,240	2,642	2,619	2,820	3,800	3,800	4,000
Ghana	26	25	75	75	(2/)	(2/)	(2/)
Kenya	20	20	25	25	(2/)	(2/)	(2/)
Libya	492	909	945	1,055	900	1,200	1,300
Morocco	7	7	5	5	(2/)	(2/)	(2/)
Nigeria	220	36	--	--	(2/)	(2/)	(2/)
South Africa	8,620	8,741	6,830	7,019	9,000	9,000	9,000
Tunisia	177	201	229	237	240	240	250
Uganda	--	12	15	7	(2/)	(2/)	(2/)
Zimbabwe	580	210	255	269	(2/)	(2/)	(2/)
Undistributed	--	--	--	--	300	350	350
Total	13,200	13,600	11,800	12,400	14,900	15,400	15,800

--Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Included in "Undistributed."

Iron and Steel.—Production.—Africa produced 12.354 Mt of steel in 2000; this was more than 5% higher than that of 1999. Africa represented only 1% of world steel production. Output in Libya increased by 11.7%; Egypt, by 7.7%; and South Africa, by 2.8%. Overall, South Africa produced more than 7 Mt, or 57% of Africa's steel; Egypt, more than 2.8 Mt, or 23% of Africa's steel; and Libya, more than 1 Mt, or almost 9%.

The major development in this sector in Africa was in Egypt where Alexandria National Iron and Steel Co. began commercial production of an 80,000-t/yr direct-reduction iron plant and Suez Steel Co. opened a 600,000-t/yr-capacity steel minimill in 2000.

Consumption.—Africa accounted for 2% of global steel consumption. It consumed 15.4 Mt of finished steel products in 2000, which was an increase from 14.8 Mt in 1999 and 13.7 Mt in 1995. From 1995 to 2000, South Africa's consumption of steel products fell to 4 Mt from 4.4 Mt. Egypt's consumption increased to 5.5 Mt in 2000 from 3.7 Mt in 1995, and the demand for steel by other African countries rose to 5.8 Mt from 5.6 Mt (International Iron and Steel Institute, 2001, Apparent steel consumption—1994 to 2000, accessed November 16, 2001, at URL http://www.worldsteel.org/trends_indicators/figures_21.html).

Outlook.—African mine production of iron ore is expected

to increase slightly to about 50 Mt in 2001 and to about 53 Mt by 2003. In 2001, the projected decline in crude steel output from Libya and Zimbabwe should be offset by increased steel production in Egypt and South Africa (Metal Bulletin, 2001). Proposed expansions of steel plants in Algeria, Egypt, and Libya should increase African steel production to 15.8 Mt by 2005.

Africa's consumption of finished steel is expected to increase by nearly 3% in 2001, 2% in 2002, and between 1% and 2% from 2003 to 2006. By 2006, Africa is likely to account for about 2% of world steel consumption [MEPS (International) Ltd., 2002, Global iron and steel production to 2006 [abstract], accessed April 23, 2002, at URL <http://www.meps.co.uk/Global%20Tables.html>).

Lead.—Production.—Africa produced 177,097 t of lead in 2000, down by less than 1% compared with output in 1999. Africa accounted for 6% of the world's total production. The lead mining sector in Africa was dominated by Morocco, which produced 82,300 t, or about 47% of Africa's output, and by South Africa, which mined 75,262 t, or about 42%. Algeria, Namibia, Nigeria, and Tunisia also mined lead ore.

Consumption.—In 2000, Africa's share of the world's lead consumption was 2%; South Africa accounted for 56% of the continent's lead consumption. Lead consumption fell to 119,400 t in 2000 compared with 127,000 t in 1999. The decline in

TABLE 6
AFRICA: HISTORIC AND PROJECTED LEAD MINE PRODUCTION, 1990-2005 1/

(Metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Algeria	1,100	1,383	1,215	818	(2/)	(2/)	(2/)
Morocco	68,800	67,708	79,900	82,300	83,000	85,000	90,000
Namibia	18,000	16,084	9,885	12,115	13,000	13,000	13,000
South Africa	69,400	88,449	80,191	75,262	50,000	50,000	40,000
Tunisia	2,970	6,601	6,589	6,602	(2/)	(2/)	(2/)
Undistributed	--	--	--	--	4,000	4,000	4,000
Total	160,000	180,000	178,000	177,000	150,000	150,000	140,000

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Included in "Undistributed."

African consumption of lead is likely to continue, particularly in South Africa where consumption for the first 7 months of 2001 was about 30% less than that of the same period in 2000 (World Bureau of Metal Statistics, 2001, p. 82).

Outlook.—The mine output of lead also was expected to decline, and little change is expected between 2001 and 2005 for refined lead output.

Manganese.—Production.—Africa produced ore containing about 2.74 Mt of manganese in 2000, which was more than 12% higher than that of 1999. Africa represented 38% of the world total. South Africa produced 1.57 Mt, or more than 57% of Africa's output, and Gabon produced 876,000 t, or about 32%.

The major development in this sector in Africa for 2000 was in Gabon where Compagnie Minière de l'Ogooué S.A.'s

(Comilog) \$70 million manganese ore enrichment and sintering plant in Gabon was inaugurated. The plant, which is located at Moanda, will have a production capacity of 600,000 t/yr of sintered manganese ore. In Ghana, Manganese Company Ltd.'s Nsuta-Wassaw open pit mine near Tarkwa, which has benefited from recent investment in upgrading mining equipment and optimizing mine plans, saw production increase to 895,669 t of manganese ore in 2000 from 638,937 t in 1999.

Outlook.—Mine production of manganese is expected to approach 3.6 Mt by 2003. In Gabon, Comilog's new plant will extend the life of its mine by allowing the processing of manganese fines and will provide a direct feed to Eramet's manganese ferroalloy plants. In addition, in South Africa, the Associated Manganese Mines of South Africa Ltd. (Assmang),

TABLE 7
AFRICA: HISTORIC AND PROJECTED MANGANESE MINE PRODUCTION, 1990-2005 1/

(Thousand metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Egypt	--	(3/)	10	10	10	10	10
Gabon	1,220	950	893	876	1,650	1,650	1,650
Ghana	96	85	204	287	290	290	320
South Africa	1,910	1,330	1,330	1,570	1,600	1,600	1,650
Total	3,230	2,370	2,440	2,740	3,550	3,550	3,630

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ In addition to metallurgical grade manganese, Gabon, Morocco, and South Africa produce battery- and chemical-grade manganese oxide.

3/ Less than 1 unit.

was investing \$75 million to add a new shaft complex at the Nchwaning III underground manganese mine. The new shaft was expected to be operational by late 2003. The expanded Nchwaning operation will have a run-of-mine capacity of about 2 million metric tons per year (Mt/yr) of manganese ore, this will extend its life by more than 20 years.

Nickel.—Production.—In 2000, Africa's mine production of nickel decreased to 79,700 t from 81,100 t in 1999. Africa accounted for about 6% of world nickel mine production. South Africa produced 46% of Africa's nickel mine output; Botswana, 45%; and Zimbabwe, 10%. In 2000, South Africa's output of refined nickel increased to 29,616 t from 28,345 t in 1999.

Consumption.—Africa accounted for slightly more than 3% of the world's nickel consumption. Demand for refined nickel rose to 38,000 t in 2000 compared with 34,400 t in 1999. Within the region, South Africa, which was the dominant consumer, accounted for 99% of African nickel demand (World

Bureau of Metal Statistics, 2001, p. 105).

Outlook.—Changes in refined nickel consumption and the output of nickel ore and refined nickel output in Africa are expected to be modest (World Bureau of Metal Statistics, 2001, p. 103-105). Phelps Dodge Mining Company completed a detailed feasibility study and environmental assessment of the Ambatovy nickel and cobalt laterite deposit in central Madagascar, which it discovered in 1998; it was closely monitoring the Malagasy Government's efforts to develop a new mining investment code. The Ambatovy deposit was being designed to produce 36,000 t/yr of nickel and 3,000 t/yr of cobalt. Barrick Gold Corp. was evaluating the Kabanga nickel sulfide deposit in northwestern Tanzania. The previous owner, Sutton Resources Ltd., had planned to produce about 17,000 t/yr of nickel, 1,600 t/yr of copper, and 1,200 t/yr of cobalt.

Platinum-Group Metals.—Production.—In 2000, South Africa accounted for an estimated 74% of the world's

TABLE 8
AFRICA: HISTORIC AND PROJECTED NICKEL MINE PRODUCTION, 1990-2005 1/

(Metric tons)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Botswana	23,200	18,088	33,733	34,465	20,000	20,000	20,000
South Africa	29,000	30,700	36,200	36,616	36,000	36,000	40,000
Zimbabwe	13,500	11,721	11,164	8,160	8,000	8,000	8,000
Total	66,000	60,509	81,100	79,700	64,000	64,000	68,000

e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

production of platinum, 86% of rhodium and other PGM, and 32% of palladium. South Africa produced 206,770 kg of PGM and exported 198,944 kg valued at \$3.9 billion; the country was well positioned to capitalize on a sharp increase in palladium and platinum prices.

Anglo American Platinum Corp. Ltd. (Anglo Platinum), which was the world's largest PGM producer, was undergoing a \$2 billion major capital investment program to expand production of platinum to 108,862 kg by 2006 from its 2000 level of 62,200 kg. In 2000, capital expansion investment was \$193 million with more than \$450 million projected for 2001 (Anglo American Platinum Corp. Ltd., 2001, p. 48-51).

Impala Platinum Holdings Ltd. (Implats) held majority interests in the Impala Platinum operations, Platexco Inc., and Barplats Mines Ltd., and minority interest in the Aquarius Platinum and the Two Rivers Platinum (Pty) Ltd. joint ventures. During 2000, Implats took the first step in its plans to expand

production at a rate of 10% per year. Implats planned on investing \$486 million from 2000 to 2004 to maintain its in-house capacity at the 31,110-kilogram-per-year (kg/yr) level until 2030. The \$230 million Winnaarshoek and the Dwars Rivier Farm projects were expected to produce 5,443 kg/yr and 3,110 kg/yr, respectively, of PGM by 2004. Barplats' Crocodile River Mine was brought into production during 2000 (Impala Platinum Holdings Ltd., 2001, p. 9-11, 35, 37; Business Day, May 30, 2001, Avmin, Implats in R551m platinum deal, accessed October 24, 2001, at URL <http://www.bday.co.za/content/direct/1,3523,858927-6079-0,00.html>).

During 2000, Lonmin plc, which was South Africa's third largest PGM producer, announced plans to increase production by 43% during a 7-year period to 27,060 kg/yr of platinum at a capital cost of \$550 million, which they expect to cover from cash flow (Lonmin plc, 2000, p. 2).

Also in South Africa, Aquarius Platinum Ltd. had interests

TABLE 9
AFRICA: HISTORIC AND PROJECTED PLATINUM MINE PRODUCTION, 1990-2005 1/

(Kilograms)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
South Africa	87,800	102,300	121,304	114,459	130,000	130,000	135,000
Zimbabwe	21	7	479	505	520	500	500
Total	87,800	102,300	122,000	115,000	131,000	130,000	140,000

e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown

TABLE 10
AFRICA: HISTORIC AND PROJECTED PALLADIUM MINE PRODUCTION, 1990-2005 1/

(Kilograms)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
South Africa	38,300	51,000	58,164	55,818	63,000	63,000	66,500
Zimbabwe	31	17	342	366	371	350	350
Total	38,300	51,000	58,500	56,200	63,000	63,000	67,000

e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

TABLE 11
AFRICA: HISTORIC AND PROJECTED ILMENITE MINE PRODUCTION, 1990-2005 1/

(Thousand metric tons of TiO₂)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Egypt	--	30	69	66	69	69	69
Kenya	--	--	--	--	--	--	150
Mozambique	--	--	--	--	--	--	300
Sierra Leone	33	--	--	--	--	50	50
South Africa	567	890	981	1,060	1,060	1,100	1,100
Total	600	920	1,050	1,120	1,130	1,200	1,600

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

in PGM projects that included the Kroondal Mine and the Marikana and the Everest South PGM projects in North West Province. In 2000, Kroondal Platinum Mines Ltd. produced 1,533 kg of platinum, 707 kg of palladium, and 236 kg of rhodium, all in concentrates, which were sold to Implats for refining. Kroondal Platinum entered a 50/50 joint venture with Anglo Platinum's Rustenburg Division to expand Kroondal's production to 15,550 kg/yr of PGM, which included 9,330 kg/yr of platinum, by 2002. Aquarius has decided to begin development of the \$70 million Marikana project, which will produce concentrates that contain 2,924 kg of platinum, 1,483 kg of palladium, and 529 kg of rhodium to be sold to Implats (Aquarius Platinum Ltd., 2001, p. 2-9).

Northam Platinum Ltd. (Northam) of South Africa operated the Northam Mine and processing plant near Anglo Platinum's Amandelbult Section. Northam's equity partners included Mvelaphanda Platinum (22.5%) (an economic empowerment company) and Anglo Platinum (20%). During the year that ended June 30, 2001, Northam reported sales at 5,235 kg of platinum, 2,475 kg of palladium, 414 kg of rhodium, and 183 kg of gold. Construction of the concentrator for the UG2 Reef expansion project was completed in November 2000 and commissioned by January 2001 (Northam Platinum Ltd., 2001, Operational review, Annual Report for 2001, accessed October 24, 2001, at URL http://www.northam.co.za/annual_report/2001/ar_index.html).

SouthernEra Resources Ltd. of Canada began development of the \$86 million Voorspoed section of its Messina Platinum Mine in South Africa in 2000; completion was expected in early 2003. The mine is scheduled to produce a total of 4,945 kg/yr of four platinum-group elements plus gold. A second ore body, the Doornvlei section, held potential for future expansion of the Messina Mine (SouthernEra Resources Limited, 2001, Projects—The Messina platinum project, accessed October 25, 2001, at URL <http://www.southernera.com/messina.htm>).

Outlook.—Global demand for platinum is expected to increase by about 5% in 2001; falling demand for platinum for jewelry will be more than offset by its rising use in pollution control and other industrial applications. South Africa's mine production of platinum is expected to increase by 13.6% to 130,000 kg in 2001 from 114,459 kg in 2000. A further increase to 135,000 kg is expected by 2005. Palladium production is expected to increase by 12.9% to 63,000 kg in 2001 and to 66,500 kg between 2003 and 2005.

Tin.—Consumption.—Africa's share of the world's tin consumption was about 1%. In 2000, continental consumption fell by about 7% compared with 1999 demand. South Africa accounted for 77% of the region's tin consumption (World

Bureau of Metal Statistics, 2001, p. 122). Tin consumption is likely to rise slightly in 2001.

Outlook.—Tin ore and refined tin production are expected to increase owing to higher output from Nigeria (World Bureau of Metal Statistics, 2001, p. 120-122).

Titanium.—Production.—Following Australia, South Africa was the world's second largest producer of ilmenite and rutile concentrates and of titanium slag from operations at Namakwa Sands and at Richards Bay. In 2000, South Africa's production of titaniferous slag was estimated to have increased to 1.12 Mt from 1.1 Mt in 1999. Production of rutile was estimated to have remained unchanged at 100,000 t in 2000.

Outlook.—Four new titanium bearing heavy sands projects are under active consideration for development in eastern and southern Africa. The proposed projects, which represent \$840 million in new investments, include the Kwale project of Tiomin Ltd. of Canada in Kenya; the Corridor Sands deposit of Southern Mining/Western Mining Corp. of Australia, which was scheduled for start-up in August 2001; the Moma project of Kenmare Resources plc of Ireland, which was scheduled for start-up in early 2003 in Mozambique; and the Iscor Ltd. project in South Africa. In Sierra Leone, the Government was encouraging Sierra Rutile Ltd. to reevaluate the feasibility of investing an estimated \$100 million to reopen its large high-grade rutile mine, which closed in 1995 because of the civil war.

Zinc.—Production.—In 2000, Africa's mine output of zinc amounted to 259,775 t, which was a decrease of more than 5% from that of 1999. Africa accounted for nearly 3% of world zinc mine production. Morocco, which was the leading producer of zinc in Africa, accounted for 40% of the continent's zinc mine output; South Africa, 24%; and Namibia and Tunisia, about 16% each. South Africa produced about 1% of global zinc smelter output in 2000.

Outlook.—During 2000, six zinc projects were underway that could make Africa a significant player in world zinc markets. Four of the six projects, Anglo American plc's Skorpion project in Namibia, its Black Mountain expansion project, and its Gamsberg project in South Africa and Metorex Ltd.'s Perkoa zinc project in Burkina Faso would require a total investment of around \$1.5 billion. These projects are expected to triple Africa's zinc production from its 1998 level of 280,875 t. The other two proposed projects are less certain. Billiton's proposed \$580 million 250,000-t/yr zinc smelter at Coega, South Africa (near Port Elizabeth), has been put on hold by the withdrawal of Billiton's partner and delays in approving the Coega Port development. In Congo (Kinshasa), the joint venture between Anglo American and American Mineral Fields Inc. has been conducting a feasibility study on reopening the Kipushi Mine,

TABLE 12
AFRICA: HISTORIC AND PROJECTED ZINC MINE PRODUCTION, 1990-2005 1/

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Algeria	4,160	7,174	9,808	10,452	12,000	12,000	13,000
Morocco	18,800	79,947	111,703	105,107	123,000	135,000	135,000
Namibia	37,700	30,209	35,140	40,266	32,000	80,000	180,000
South Africa	75,000	70,241	69,733	62,703	60,000	40,000	40,000
Tunisia	3,960	44,244	49,066	41,247	41,000	39,000	40,000
Total	140,000	232,000	275,000	260,000	270,000	310,000	410,000

e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

which would produce 200,000 t/yr of zinc and 30,000 t/yr of copper when political and market conditions are more favorable.

The mine output of zinc is expected to increase significantly between 2001 and 2005. Production will decline in South Africa after the Perring Mine is closed but will expand significantly in Namibia with the opening of the Skorpion Mine, which is expected to open in 2003 and to reach full production by 2005.

Industrial Minerals

Cement.—Africa's production of cement increased by 5.8% to an estimated 71.5 Mt. This represents 4% of world production. Egypt, which produced about 34% of Africa's cement, was the largest producer; its output increased to 24.1 Mt in 2000 from 23.3 Mt in 1999.

Diamond.—Africa's output of diamond represents 50% of world production. In 2000, mine output decreased by less than 1% to an estimated 61.7 million carats. Botswana produced about 39% of Africa's diamonds; its output increased by nearly 6% to 24.218 million carats. Congo (Kinshasa) was the second leading producer of diamonds in Africa in 2000 with 17.7 million carats, or almost 29%. South Africa was the third leading producer of diamonds in 2000 with 10.8 million carats, or nearly 18%. In 2000, 80% of Botswana's diamond production was gem quality; South Africa, 40%; and Congo (Kinshasa), 20%.

The major development in the diamond sector in 2000 was the completion of the Orapa Mine expansion in Botswana; with the expansion, Debswana Diamond Co. (Pty.) Ltd. could increase production to 12 million carats in 2001. In Namibia, Namdeb Diamond Corp. (Pty.) Ltd. accounted for 86% of 1.54 million carats of Namibian national output. Recent entrants, such as Afri-Can Marine Minerals Corp. (formerly Nora Exploration Inc.), Diamond Fields International Ltd. of Canada, Namibian Minerals Corp. (Namco), and Trans Hex International Ltd., were aggressively developing new offshore resources with innovative submarine mining technologies. During 2000, Namco, which

was Namibia's second largest diamond producer, invested \$50 million in expanding its marine mining capacity.

The international community, encouraged by formal United Nations (UN) sanctions and monitoring, continued its efforts to control the illegal mining and export of so-called conflict or blood diamonds, which were being used to finance civil wars in Angola and Sierra Leone. In Angola, officially reported production increased to 4.3 million carats in 2000 from 3.7 million carats in 1999. The value of diamond production in 2000 was reported to be at least \$1.1 billion; 69% of diamond produced under Angolan Government control came from nine state-owned mines at a value of \$398.5 million, and 31% at a value of \$347.6 million was attributed to artisanal miners (United Nations Security Council, 2001, p. 16). Alleged smuggling by the National Union for the Total Independence of Angola (UNITA) and other sources was estimated to be \$350 million in 2000.

United Nations Security Council Resolution 1306 (2000) expressed UN concern over the role the mining and smuggling of illicit diamonds by the rebel forces played in funding the conflict in Sierra Leone and asked all states to work to prohibit the flow of rough diamonds from Sierra Leone into such neighboring countries as Liberia. The UN also requested Sierra Leone to put in place a Certificate of Origin Program for the export of rough diamonds.

Fertilizers.—In 1999, the last year for which data are available, Africa's apparent consumption of phosphate fertilizers increased to 992,600 t compared with 937,600 t in 1998, and that of nitrogenous fertilizers rose to 2.4 Mt from 2.35 Mt. Potash consumption fell to 483,300 t from 492,700 t. Africa accounted for about 3% of the world's nitrogenous fertilizer and potash consumption and 2% of world phosphate fertilizer demand (International Fertilizer Industry Association, 2001, Nitrogen, phosphate and potash statistics, accessed November 16, 2001, at URL <http://www.fertilizer.org/ifa/statistics/IFADATA/dataline.asp>). Africa consumed 18.3 Mt of sulfuric acid in 1999 and accounted for 11% of global sulfuric acid

TABLE 13
AFRICA: HISTORIC AND PROJECTED DIAMOND MINE PRODUCTION, 1990-2005 1/

(Thousand carats)

Country	1990	1995	1999	2000	2005 e/
Angola	1,130	2,900	3,732	4,349	6,000
Botswana	17,400	16,802	22,898	24,218	26,000
Central African Republic	381	530	530	530	(2/)
Congo (Kinshasa)	19,400	22,024	20,116	17,700	17,000
Cote d'Ivoire	12	75	398	320	(2/)
Gabon	1	1	1	1	(2/)
Ghana	650	632	680	920	(2/)
Guinea	127	365	550	450	(2/)
Liberia	100	150	200	170	(2/)
Namibia	763	1,382	1,633	1,542	2,000
Sierra Leone	78	214	600	350	(2/)
South Africa	8,710	9,683	10,022	10,805	14,000
Tanzania	85	50	235	354	(2/)
Zimbabwe	--	204	45	17	(2/)
Other	XX	XX	XX	XX	2,000
Total	48,800	55,000	61,600	61,700	65,000

-- Zero. e/ Estimated. XX Not applicable.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Included with "Other."

consumption.

Gemstones.—In 2002, African Gem Resources Ltd. (Afgem) expected to start mining tanzanite in an area in Tanzania that had been worked by artisanal miners. Afgem proposed to develop a formal mining operation that would reach production levels of 1.5 million carats per year by 2005. Afgem anticipated that mining the area's tanzanite resource would take at least 20 years. In Madagascar, the discovery of new ruby deposits in early 2001 was expected to lead to higher ruby production and exports.

Graphite.—Africa's production of graphite was 27,000 t in 2000 and was unchanged from that of 1999. This represents 4% of world production. Madagascar and Zimbabwe were the only significant producers of graphite in Africa and their output was 15,000 t and 12,000 t, respectively.

Phosphate Rock.—Production.—In 2000, Africa's production of phosphate rock decreased by 3.6% to about 38 Mt compared with 1999 output. This level of production represented about 29% of world output. Morocco, which mined about 56% of Africa's phosphate rock, was the largest producer; its output, however, decreased to about 21.5 Mt in 2000 from almost 22.8 Mt in 1999.

Outlook.—In 2001, the production of phosphate rock is likely to rise in Algeria and Morocco and fall in South Africa, Senegal, Togo, and Tunisia.

Mineral Fuels

Coal.—Production.—Africa's production of coal decreased by about 1% to 228.9 Mt. This represented about 5% of world production. South Africa produced more than 97% of Africa's coal; its output increased to 228.9 Mt in 2000 from about 223.5 Mt in 1999.

Consumption.—Africa accounted for about 4% of the world's coal consumption.

Natural gas.—Production.—In 2000, Africa's production of natural gas was 145.7 trillion cubic meters, which was an

increase of 9% from 1999. This represents nearly 6% of world production. Algeria produced about 69% of Africa's natural gas; its dry gas output increased to 100 trillion cubic meters compared with 97.2 trillion cubic meters in 1999.

In Mozambique, the stalled development of the Pande and the Temane gasfields was revived in 2000 when Sasol Ltd. and the Government signed agreements to build a natural gas pipeline to South Africa. Nigeria continued the economic exploitation of its natural gas resources. The third train of the \$3.8 billion liquefied natural gas (LNG) plant at Bonny was commissioned in September 2000.

Consumption.—The African continent consumed slightly more than 2% of the world's natural gas. African consumption rose to 58.9 billion cubic meters in 2000 compared with 52.1 billion cubic meters in 1999 and 44.8 billion cubic meters in 1995 (British Petroleum plc, 2001, p. 26).

Outlook.—Successful drilling programs in Algeria, Egypt, Nigeria, and Tunisia and several proposed natural gas facilities and infrastructure projects should lead to more development of African natural gas resources. African production of natural gas is projected to be almost 30% higher in 2005 than it was in 2000. In Egypt, four proposed LNG projects are being considered. In Mozambique, production from the Temane gasfield is expected to reach about 1 billion cubic meters in 2004.

In Namibia, the \$1 billion Kudu Gas project to pipe natural gas from the Kudu Oil Fields to South Africa is scheduled to start in 2005 (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>).

With the completion of the planned fourth and fifth LNG production trains in 2005, Nigeria's Bonny LNG facility will have the capacity to produce 16.8 Mt/yr of LNG, 2 Mt/yr of liquefied petroleum gas, and 1 Mt/yr of condensate. A consortium led by Chevron Nigeria Ltd. has committed to build

TABLE 14
AFRICA: HISTORIC AND PROJECTED DRY NATURAL GAS PRODUCTION, 1990-2005 1/

(Million cubic meters)

Country	1990	1995	1999	2000	2001 e/	2003 e/	2005 e/
Algeria	48,500	58,100	97,151	100,092	100,000	110,000	120,000
Angola	538	560	560	560	560	560	3,000
Congo (Kinshasa)	--	--	--	--	--	60	60
Cote d'Ivoire	--	36	800	800	1,200	1,500	1,200
Egypt	7,900	12,536	17,800	21,000	20,000	31,000	29,000
Equatorial Guinea	--	--	83	98	800	1,350	1,350
Ethiopia	--	--	--	--	--	--	100
Gabon	150	150	99	99	104	103	100
Libya	6,200	6,345	6,200	6,100	6,000	7,200	17,000
Morocco	37	22	39	39	37	36	37
Mozambique	--	--	55	55	60	60	1,000
Nigeria	3,230	5,000	7,000	13,000	17,000	21,000	25,000
Senegal	110	110	56	56	50	41	33
South Africa	--	1,980	2,039	2,088	2,200	2,000	1,900
Sudan	--	--	--	10	10	10	10
Tanzania	--	--	--	--	--	400	800
Tunisia	200	250	1,450	1,750	1,750	1,900	2,200
Total	66,900	85,100	133,000	146,000	150,000	180,000	200,000

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

the West African Gas Pipeline (WAGP), but the proposed 2002 inauguration of the pipeline has been pushed back to 2006. The \$400 million WAGP project will include the construction of an offshore gas pipeline from the Niger Delta to Ghana. The pipeline will supply Nigerian natural gas that is currently (2000) being flared to powerplants in Benin, Ghana, and Togo (allAfrica.com, November 13, 2000, West African gas pipeline co-operating for energy security, accessed January 20, 2001, at URL <http://allafrica.com/stories/200011130108.html>).

The Songas natural gas project in Tanzania is expected to start production in 2003.

Petroleum.—Production.—Africa's production of crude petroleum increased by 2.6% to about 2.8 billion barrels, which represented more than 10% of world production. Nigeria, which produced 28% of Africa's crude oil, remained the largest producer on the continent; its output increased to 783 million barrels (Mbbbl) in 2000 compared with 777 Mbbbl in 1999. Libya was the second leading producer of crude oil in Africa in 2000 with 538 Mbbbl, or about 19% of total African production. Algeria was third, with 476.3 Mbbbl; Egypt was fourth, with 290 Mbbbl; and Angola was fifth, with slightly more than 272 Mbbbl.

There were several major developments in the hydrocarbon sector in 2000. In Angola, the \$400 million Kuito floating production storage and offloading vessel (FPSO) reached its full capacity of 100,000 barrels per day (bbl/d) (Oil Online, November 2, 1999, Kuito kicks off for Angola, accessed January 20, 2001, at URL http://www.oilonline.com/news_spotlight_offshore_kuito110299.html). The \$3 billion Girassol Field produced its first oil in 2000. In October 2000, Exxon Mobil Corp. of the United States began construction of the Chad-Cameroon Petroleum Development and Pipeline project in west-central Africa in conjunction with its partners Petroliaam Nasional Bhd. of Malaysia and Chevron Corp. of the United States. The project will develop oilfields in southern Chad and transport the crude oil to the coast of Cameroon for export to world markets. The \$3.5 billion project should produce about 225,000 bbl/d, or 1 billion barrels (Gbbbl) during its 30-year

life (ExxonMobil, October 18, 2000, ExxonMobil affiliate commences major African development project, accessed January 20, 2001, at URL http://www.exxon.mobil.com/em_newsrelease). The International Development Association approved a \$24 million loan for environmental management and monitoring of the project, the International Finance Company approved a \$100 million loan to the pipeline companies, and the World Bank approved a \$93 million loan to finance the interests of the Governments of Cameroon and of Chad in the field development and pipeline projects.

Consumption.—African consumption of crude oil increased to about 904 Mbbbl from 894 Mbbbl in 1999 and 807 Mbbbl in 1995; Africa accounted for about 3% of the world's petroleum consumption (British Petroleum plc, 2001, p. 10).

Outlook.—Africa's production of crude petroleum could increase to about 3.9 Gbbbl in 2005. This would be an increase of almost 39% compared with Africa's production of petroleum in 2000.

In Angola, the Girassol Field was expected to reach full capacity of 200,000 bbl/d during 2001. The \$3.1 billion Kizomba-A FPSO is being built by an ExxonMobil consortium and will produce 250,000 bbl/d from the Chocahlo and the Hunga Fields by 2004. The Kizomba B project will develop the Dikanza and the Kisanje Fields and will be operated by Esso Exploration Angola Ltd. (Esso) (Oil Online, August 14, 2000, Next mega-projects set for takeoff, accessed December 20, 2000, at URL http://www.oilonline.com/news_spotlight_offshore_westafrica081400.html). The large capital costs involved will likely lead to sequential development rather than parallel. Angola's production of crude petroleum is expected to increase to 475 million barrels per year (Mbbbl/yr) by 2002 and to 730 Mbbbl/yr by 2006.

In Nigeria, Shell Petroleum Development announced plans to develop the Bonga deepwater oilfield. The \$1.8 billion Bonga FPSO will produce 225,000 bbl/d by 2003 (Adrian Cottrill, July 1, 2000, Next mega-projects set for takeoff, accessed December 20, 2000, at URL <http://www.oilonline.com/news/features/oe/>

TABLE 15
AFRICA: HISTORIC AND PROJECTED CRUDE PETROLEUM, INCLUDING CONDENSATE, PRODUCTION, 1990-2005

(Thousand 42-gallon barrels)

Country	1990	1995	1999	2000	2002 e/	2003 e/	2005 e/
Algeria	444,000	438,730	457,158	476,288	479,000	550,000	600,000
Angola	174,000	232,800	279,590	272,290	475,000	475,000	475,000
Benin	1,416	654	--	--	--	--	--
Cameroon	64,600	39,400	47,000	47,000	29,000	27,000	24,000
Chad	--	--	--	--	1	30,000	84,000
Congo (Brazzaville)	58,800	63,875	93,951	96,700	93,000	92,000	90,000
Congo (Kinshasa)	10,600	10,087	8,650	10,300	9,700	9,400	9,800
Cote d'Ivoire	770	2,000	10,000	10,000	2,000	3,000	2,600
Egypt	319,000	335,800	311,000	290,000	230,000	210,000	220,000
Equatorial Guinea	--	2,300	33,000	39,000	58,000	65,000	90,000
Gabon	100,000	133,000	124,500	124,500	124,000	120,000	115,000
Ghana	--	--	2,190	2,200	2,100	2,300	2,200
Libya	502,000	509,175	520,000	538,000	530,000	650,000	700,000
Morocco	114	36	35	35	35	35	35
Nigeria	660,000	740,000	777,000	783,000	800,000	1,000,000	1,350,000
Senegal	8	2	1	1	--	--	--
South Africa	--	--	5,493	6,606	6,400	5,000	3,000
Sudan	--	730	19,000	69,000	70,000	88,000	89,000
Tunisia	36,500	32,690	30,960	28,207	24,000	22,000	18,000
Total	2,370,000	2,540,000	2,720,000	2,790,000	2,900,000	3,400,000	3,900,000

-- Negligible or no production. e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

20000701.next_meg.66.asp). The development of six deepwater oilfields by 2005 at a cost of \$10 billion will access 4 Gbbl of oil equivalent Nigerian reserves, which includes 70.8 billion cubic meters of natural gas. Nigeria's production is expected to increase to 1 Gbbl by 2003, and to 1.35 Gbbl by 2005.

Uranium.—Africa's production of uranium decreased by 13.2% to 7,114 t. This represented 17% of world production. Namibia, which was Africa's largest producer, produced 45% of Africa's uranium; its output increased to 3,201 t in 2000 from 3,171 t in 1999. Niger was the second leading producer of uranium in Africa with 2,898 t, or almost 41% of African uranium production in 2000. South Africa was the third leading producer of uranium with 1,015 t, or about 14%.

Geothermal Energy.—The prospect of economic development of geothermal energy power sources in Africa along the East African Rift Valley was drawing increasing interest from investors and local Governments. The geothermal potential of the Ethiopian Rift has been estimated to be 700 megawatts (MW). The Aluto-Langano geothermal powerplant in the lakes district has a capacity of 7.3 MW; the Government planned to increase capacity at the plant to 30 MW. From 2000 to 2005, Kenya's geothermal generating capacity was expected to increase by 128 MW; geothermal capacity was expected to increase by 531 MW by 2017. In Djibouti, a joint venture between Geothermal Development Associates of Nevada and Electricité de Djibouti proposed to build a geothermal powerplant near Assal.

Hydroelectric Energy.—In Ethiopia and Uganda, expansions of the country's hydroelectric power capacity were underway. In Kenya, new thermal powerplants were being built to reduce Kenya's vulnerability to droughts, which affect its ability to generate electric power from existing hydroelectric dams.

Trade Review and Outlook

In 2000, the value of African exports increased to \$155.4 billion from \$128.1 billion in 1999 and \$120.4 billion in 1998. Foreign trade has increased to 60% of the value of African GDP in 1999 compared with 44.5% in 1980. During the same period, exports increased to 23.7% of GDP from 17.6%. From 1995 to 1999, intraregional exports accounted for an average of 9.4% of all African exports and 0.4% of North African exports. The European Union absorbed about 40% of African exports (Blavy, 2001, p. 16-17; International Monetary Fund, 2001, p. 235). Where data is available on the value of mineral trade, they is discussed in the individual country chapters in this book. Country chapters also are available at URL <http://minerals.usgs.gov/minerals/pubs/country/africa.html>.

After incurring current account deficits of \$15.5 billion in 1999 and \$20.6 billion in 1998, Africa recorded a regional surplus of \$2.1 billion in 2000. Most of the improvement in Africa's trade position was attributable to rising oil prices; oil-exporting countries had an average surplus of 9.7% of GDP in 2000. Africa's petroleum trade surplus increased to \$47.3 billion in 2000 from \$25.5 billion in 1999 and \$19.3 billion in 1998. Oil-importing countries had an average deficit of 2.7% of GDP; many sub-Saharan countries, however, ran large deficits because of high oil prices, weak prices for nonfuel commodities, and debt service costs. Africa's external debt fell to \$183.4 billion in 2000 from \$226.9 billion in 1999 (International

Monetary Fund, 2001, p. 44, 235, 263).

In 2000, Africa accounted for 60% of the world's exports of phosphoric acid; phosphate rock, 46%; crude petroleum, 16%; petroleum products, 8%; and nearly 5% of the world's aluminum exports. South Africa accounted for 73% of African aluminum exports and West African countries accounted for 60% of African crude petroleum exports (British Petroleum plc, 2001, p. 19; World Bureau of Metal Statistics, 2001, p. 11).

The value of African exports was expected to rise by 0.3% in 2001 and by 2.3% in 2002. The trade surplus for petroleum was expected to fall to \$45 billion in 2001 and to \$41.7 billion in 2002. The projected current account deficit of \$3.9 billion in 2001 is expected to increase to \$6.4 billion in 2002. Debt relief initiatives by the IMF and World Bank should result in further declines in Africa's external debt, which was projected to fall by nearly 25% by 2006 (International Monetary Fund, 2001, p. 235, 263).

Environment

Deforestation has been a significant environmental issue in Africa. From 1990 to 2000, forest cover decreased at a rate of 0.8% per year compared with the global rate of 0.2% per year. The most rapid deforestation occurred in Burundi, which lost forest cover at a rate of 9% per year; Comoros, 4.3%; Rwanda, 3.9%; and Niger, 3.7% (Food and Agricultural Organization of the United Nations, 2001, p. 31, 34). The economic losses from deforestation, such as soil erosion and desertification, have led to plans to increase hydroelectric power capacity in Ethiopia and Uganda and discussions of exploiting the peat resources of Burundi.

The WAGP project could also mitigate the effects of deforestation in Africa and reduce the emissions of greenhouse gases. Some of the natural gas that is currently (2000) being flared by Nigeria will be exported to Togo, Benin, and Ghana; these countries have deforestation rates of 3.4%, 2.3%, and 1.7%, respectively (Food and Agricultural Organization of the United Nations, 2001, p. 31). The Government of Nigeria has committed to ending the flaring of natural gas by 2010, which will also lead to decreased pollution.

In Tanzania, pollution from acid mine and rock drainage at abandoned mine sites led the Government to seek financing from the Nordic Development Fund to mitigate these problems. Environmental damage attributed to the artisanal mining of sapphires in Madagascar and tantalum in Congo (Kinshasa) was drawing increasing public attention. Concerns about potential environmental impacts delayed the exploitation of natural gas in Tanzania and titanium sands deposits in Kenya and Madagascar.

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TABLE 16
AFRICA: PRODUCTION OF SELECTED MINERAL COMMODITIES, 2000 1/

(Thousand metric tons gross weight unless otherwise specified)

Country	Aluminum	Bauxite	Cement e/	Chromite	Coal, anthracite and bituminous	Cobalt, mine Co content (metric tons)
Algeria	--	--	8,300	--	--	--
Angola	--	--	350	--	--	--
Benin	--	--	450	--	--	--
Botswana	--	--	--	--	950 e/	319
Burkina Faso	--	--	50	--	--	--
Burundi	--	--	--	--	--	--
Cameroon	95	--	500	--	--	--
Central African Republic	--	--	--	--	--	--
Chad	--	--	--	--	--	--
Congo (Brazzaville)	--	--	20	--	--	--
Congo (Kinshasa)	--	--	96	--	--	7,000
Cote d'Ivoire	--	--	650	--	--	--
Egypt	200	--	24,143	--	400 e/	--
Equatorial Guinea	--	--	--	--	--	--
Eritrea	--	--	45	--	--	--
Ethiopia	--	--	880	--	--	--
Gabon	--	--	200	--	--	--
Ghana	142	504	1,950	--	--	--
Guinea	--	15,000	250	--	--	--
Kenya	2	--	1,071	--	--	--
Liberia	--	--	15	--	--	--
Libya	--	--	3,000	--	--	--
Madagascar	--	--	48	122	--	--
Malawi	--	--	198	--	45	--
Mali	--	--	10	--	--	--
Mauritania	--	--	50	--	--	--
Morocco	--	--	7,200	--	29	1,305
Mozambique	54	8	310	--	16	--
Namibia	--	--	150	--	--	--
Niger	--	--	30	--	158	--
Nigeria	--	--	2,500	--	35 e/	--
Rwanda	--	--	70	--	--	--
Senegal	--	--	1,000	--	--	--
Sierra Leone	--	--	100	--	--	--
Somalia	--	--	--	--	--	--
South Africa	676	--	8,991	6,621	222,890	580
Sudan	--	--	300	10 e/	--	--
Swaziland	--	--	--	--	380	--
Tanzania	--	--	833	--	35	--
Togo	--	--	560	--	--	--
Tunisia	--	--	5,409	--	--	--
Uganda	--	--	380	--	--	411
Zambia	--	--	380	--	168	4,600
Zimbabwe	--	--	1,000	725	3,808	126
Total 2/	1,169	15,500	71,500	7,480	228,900	14,000
World total	24,000	135,000	1,640,000	14,400	4,530,000	33,300
Share of world total	5%	11%	4%	52%	5%	42%
United States	3,668	NA	89,510	--	1,073,612	--

See footnotes at end of table.

TABLE 16--Continued
AFRICA: PRODUCTION OF SELECTED MINERAL COMMODITIES, 2000 1/

(Thousand metric tons gross weight unless otherwise specified)

Country	Copper, mine Cu content	Diamond e/ 3/ (thousand carats)	Gold e/ (kilograms)	Graphite	Iron ore	Lead, mine Pb content (metric tons)
Algeria	--	--	--	--	1,645	818
Angola	--	4,349	--	--	--	--
Benin	--	--	500	--	--	--
Botswana	38	24,218	4	--	--	--
Burkina Faso	--	--	1,000	--	--	--
Burundi	--	--	1,500	--	--	--
Cameroon	--	--	1,000	--	--	--
Central African Republic	--	530	100	--	--	--
Chad	--	--	120	--	--	--
Congo-Brazzaville	--	--	10	--	--	--
Congo-Kinshasa	21	17,700	52	--	--	--
Cote d'Ivoire	--	320	3,154	--	--	--
Egypt	--	--	--	--	2,500	--
Equatorial Guinea	--	--	--	--	--	--
Eritrea	--	--	500	--	--	--
Ethiopia	--	--	5,177	--	--	--
Gabon	--	1	70	--	--	--
Ghana	--	920	72,080	--	--	--
Guinea	--	450	13,300	--	--	--
Kenya	--	--	990	--	--	--
Liberia	--	170	1,000	--	--	--
Libya	--	--	--	--	--	--
Madagascar	--	--	9	15	--	--
Malawi	--	--	--	--	--	--
Mali	--	--	25,000	--	--	--
Mauritania	--	--	--	--	10,400	--
Morocco	7 e/	--	334	--	6	82,300
Mozambique	--	--	23	--	--	--
Namibia	19	1,542	2,456	--	--	12,115
Niger	--	--	1,000	--	--	--
Nigeria	--	--	10	--	--	--
Rwanda	--	--	10	--	--	--
Senegal	--	--	550	--	--	--
Sierra Leone	--	350	30	--	--	--
Somalia	--	--	--	--	--	--
South Africa	137	10,805	430,778	--	33,707	75,262
Sudan	--	--	6,000	--	--	--
Swaziland	--	--	--	--	--	--
Tanzania	--	354	15,060	--	--	--
Togo	--	--	--	--	--	--
Tunisia	--	--	--	--	182	6,602
Uganda	--	--	56	--	5	--
Zambia	241	--	600	--	--	--
Zimbabwe	2	17	22,070	12	451	--
Total 2/	465	61,700	605,000	27	48,900	177,100
World total	13,200	118,000	2,550,000	602	1,060,000	3,100,000
Share of world total	4%	52%	24%	4%	5%	6%
United States	1,445	(4/)	341,000	--	63,089	468,000

See footnotes at end of table.

TABLE 16--Continued
AFRICA: PRODUCTION OF SELECTED MINERAL COMMODITIES, 2000 1/

(Thousand metric tons gross weight unless otherwise specified)

Country	Manganese, mine Mn content	Petroleum, crude (thousand barrels)	Phosphate rock e/ (gross weight)	Steel, crude e/	Uranium, concentrate U ₃ O ₈ (metric tons)	Zinc, mine Zn content (metric tons)
Algeria	--	476,288	877	842	--	10,452
Angola	--	272,290	--	--	--	--
Benin	--	--	--	--	--	--
Botswana	--	--	--	--	--	--
Burkina Faso	--	--	--	--	--	--
Burundi	--	--	--	--	--	--
Cameroon	--	47,000	--	--	--	--
Central African Republic	--	--	--	--	--	--
Chad	--	--	--	--	--	--
Congo (Brazzaville)	--	96,700	--	--	--	--
Congo (Kinshasa)	--	10,300	--	--	--	--
Cote d'Ivoire	--	10,000 e/	--	--	--	--
Egypt	10 e/	290,000	1,020 e/	2,820	--	--
Equatorial Guinea	--	39,000	--	--	--	--
Eritrea	--	--	--	--	--	--
Ethiopia	--	--	--	--	--	--
Gabon	876	124,500	--	--	--	--
Ghana	287	2,200	--	75	--	--
Guinea	--	--	--	--	--	--
Kenya	--	--	--	25	--	--
Liberia	--	--	--	--	--	--
Libya	--	538,000	--	1,055	--	--
Madagascar	--	--	--	--	--	--
Malawi	--	--	--	--	--	--
Mali	--	--	--	--	--	--
Mauritania	--	--	--	--	--	--
Morocco	--	35 e/	21,459 5/	5	--	105,107
Mozambique	--	--	--	--	--	--
Namibia	--	--	--	--	3,201	40,266
Niger	--	--	--	--	2,898	--
Nigeria	--	783,000	--	--	--	--
Rwanda	--	--	--	--	--	--
Senegal	--	1 e/	2,000	--	--	--
Sierra Leone	--	--	--	--	--	--
Somalia	--	--	--	--	--	--
South Africa	1,570	6,606	2,779	7,019	1,015	62,703
Sudan	--	69,000	--	--	--	--
Swaziland	--	--	--	--	--	--
Tanzania	--	--	--	--	--	--
Togo	--	--	1,400	--	--	--
Tunisia	--	28,207	8,339	237	--	41,247
Uganda	--	--	--	7	--	--
Zambia	--	--	--	--	--	--
Zimbabwe	--	--	110	269	--	--
Total 2/	2,740	2,790,000	38,000	12,354	7,114	259,775
World total	7,280	27,100,000	133,000	846,000	41,000	8,730,000
Share of world total	38%	10%	29%	1%	17%	3%
United States	--	2,125,030	38,618	102,000	1,717	829,000

-- Zero. e/ Estimated. p/ Preliminary.

1/ Table includes data available through October 2001.

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

3/ Excluding synthetic diamond.

4/ Less than ½ unit.

5/ Includes production from Western Sahara.

TABLE 17
AFRICA: SUMMARY OF PROPOSED INVESTMENT
BY MINERAL COMMODITY, 2000-2007 1/

(Million dollars)

Commodity	Investment
Metals:	
Base metals	
Ferrous metals	
Ferroalloys (Cr, Mn, V)	570
Iron and steel	2,550
Nickel	1,700
Total	4,820
Nonferrous metals	
Aluminum and magnesium	2,300
Copper and cobalt	4,850
Zinc	2,400
Total	9,550
Grand total	14,300
Gold	4,550
Platinum-group metals	3,700
Titanium mineral concentrates (TiO ₂)	1,800
Industrial minerals:	
Coal	1,030
Diamonds	650
Other	580
Grand total	26,600
Mineral fuels, oil and gas	44,500

1/ Data are rounded to no more than three significant digits;
may not add to totals shown.

Source: U.S. Geological Survey compilation from published
company plans.

TABLE 18
AFRICA: 2000 GROSS DOMESTIC PRODUCT AT PURCHASING POWER PARITY

Country	Gross domestic product (billion dollars)	Population (millions)
Algeria	158.68	30.29
Angola	23.64	13.13
Benin	9.78	6.17
Botswana	16.76	1.65
Burkina Faso	14.19	11.54
Burundi	4.79	6.36
Cameroon	34.65	14.88
Cape Verde	1.76	0.43
Central African Republic	5.98	3.72
Chad	8.26	7.89
Comoros	0.90	0.71
Congo (Brazzaville)	5.60	3.02
Congo (Kinshasa)	37.55	50.95
Cote d'Ivoire	33.09	16.40
Djibouti	1.85	0.63
Egypt	247.85	63.98
Equatorial Guinea	2.33	0.46
Eritrea	NA	3.67
Ethiopia	37.31	63.49
Gabon	9.21	1.21
Gambia, The	2.33	1.39
Ghana	38.41	18.41
Guinea	16.81	8.15
Guinea-Bissau	1.28	1.12
Kenya	40.87	30.67
Lesotho	3.85	2.14
Liberia	NA	2.91
Libya	82.84	5.29

See footnote at end of table.

TABLE 18--Continued
AFRICA: 2000 GROSS DOMESTIC PRODUCT AT PURCHASING POWER PARITY

Country	Gross domestic product (billion dollars)	Population (millions)
Madagascar	17.14	15.97
Malawi	9.35	11.31
Mali	9.49	11.35
Mauritania	5.51	2.67
Mauritius	14.43	1.19
Morocco	112.37	28.71
Mozambique	18.04	17.69
Namibia	10.30	1.82
Niger	10.87	10.83
Nigeria	130.26	115.22
Rwanda	7.36	7.61
Sao Tome & Principe	0.19	0.14
Senegal	20.41	9.52
Seychelles	1.00	0.08
Sierra Leone	2.18	4.46
Somalia	NA	8.78
South Africa	364.35	43.69
Sudan	60.24	31.10
Swaziland	4.13	0.93
Tanzania	22.45	35.12
Togo	7.69	4.53
Tunisia	62.66	9.56
Uganda	32.04	22.21
Zambia	10.87	10.72
Zimbabwe	29.29	12.63

NA Not available.

Sources: International Monetary Fund and the United Nations.

TABLE 19
SELECTED SIGNIFICANT EXPLORATION SITES IN AFRICA FOR 2000

Location	Type 1/	Site	Commodity	Company	Resource notes 2/	Exploration notes 3/
Burkina Faso	E	Essakan	Gold	Coronation Int'l. Mining Corp.	Data not released	Extensive drilling.
Do.	F	Kalsaka	do.	Cluff Mining plc	21 metric tons gold	Feasibility drilling.
Do.	F	Youga	do.	Ashanti Goldfields Corp. Ltd.	Data not released	Do.
Ghana	P	Bogoso	do.	Golden Star Resources Ltd.	Data not released	Extensive drilling.
Do.	E	Chirano	do.	Red Back Mining NL	32 metric tons gold	Do.
Do.	F	Ntotoroso	do.	Moydow Mines International Inc.	64 metric tons gold	Feasibility study ongoing.
Do.	F	Yamfo-Sefwi	do.	Normandy Mining Ltd.	168 metric tons gold	Extensive drilling.
Mali	P	Morila/Loulo	do.	Randgold Resources Ltd.	+187 metric tons gold	Do.
Do.	E	Tabakoto	do.	Nevsun Resources Ltd.	Data not released	Do.
Mauritania	E	Maqteir	Diamond	Dia Met Minerals Ltd.	Data not released	New diamond district.
Mozambique	F	Corridor Sands	Heavy minerals	Southern Mining Corp.	8.7 million metric tons heavy minerals	Feasibility study ongoing.
Namibia	F	Luderitz/Sea Diamonds	Diamond	Diamond Fields International Ltd.	1.1 million carats diamond	Do.
Niger	E	Samira Hill/Libiri	Gold	Etruscan Enterprises Ltd.	24 metric tons gold	Extensive drilling.
South Africa	D	Richards Bay area	Heavy minerals	Iscor Ltd.	+4 million metric tons heavy minerals	Development approved.
Tanzania	E	Bulyanhulu South	Gold	Pangea Goldfields Inc.	Data not released	Extensive drilling.
Do.	E	Golden Ridge	do.	do.	90 metric tons gold	Do.
Do.	E	Tulakawa	do.	do.	52 metric tons gold	Do.

1/ D – Approved for development; E – Active exploration; F – Feasibility work ongoing/completed; P – Exploration at producing site.

2/ Resources reported where available based on data from various public sources. Data have not been verified by the U.S. Geological Survey.

3/ Sites where extensive (more than 10,000 meters) drilling or significant (more than \$4 million) expenditures have been reported.