

# MOROCCO AND WESTERN SAHARA

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## MOROCCO

Morocco is on the northwest coast of Africa bounded by Algeria, the Atlantic Ocean, the Mediterranean Sea, and the non-self-governing territory of Western Sahara. The 446,550-square-kilometer (km<sup>2</sup>) country had an estimated population of 29.6 million in 2002 (Direction de la Statistique, 2003b§<sup>1</sup>). The mineral industry of Morocco was dominated by phosphate mining. In 2002, about 23 million metric tons of phosphate rock was mined by the state-owned Office Cherifien des Phosphates (OCP), which placed Morocco as the world's second largest producer of phosphate rock after the United States<sup>2</sup> (Jasinski, 2003). A wide range of minerals that included barite, clays, coal, cobalt, copper, fluor spar, gold, iron ore, lead, manganese, salt, silver, talc, and zinc also were mined in Morocco. Mining accounted for about 1.8% of gross domestic product (GDP) which was estimated to be about \$121.3 billion<sup>3</sup> in 2002 (based on purchasing power parity), compared with a revised GDP based on purchasing power parity of \$114.8 billion for 2001 (International Monetary Fund, 2003a§, b§).

### Trade

Moroccan exports were valued at about \$7.7 billion in 2002 and \$7.1 billion in 2001. In 2001, the last year for which extensive export data were available, consumer goods exports were valued at about \$2.8 billion; exports of semifinished products (such as phosphoric acid and fertilizer), at \$1.5 billion; agricultural shipments, at \$1 billion; and exports of mineral ores, at \$507 million. Mineral and processed-mineral-related exports included phosphoric acid (\$529 million in 2002 compared with \$449 million in 2001), phosphate rock (\$408 million in 2002 compared with \$373 million in 2001), and fertilizers (\$331 million in 2002 compared with \$349 million in 2001). Other mineral and mineral-related exports, for which only 2001 data were available, included energy and lubricants (\$201 million), refined lead (\$27 million), and barite (\$17 million). In 2002, Morocco and the United States initiated free trade agreement discussions. Formal negotiations began in January 2003. Moroccan exports to the United States were valued at \$392.4 million in 2002. These included about \$85 million of nonmetallic minerals, more than \$11 million of organic chemicals and fertilizers, more than \$9 million of semifinished iron and steel mill products, and about \$9 million of petroleum

products. Imports from the United States were valued at \$565.5 million in 2002 (Lazare and others, 2003; Direction de la Statistique, 2003a§; U.S. Census Bureau, 2003§).

### Structure of the Mineral Industry

In 2002, the Ministère de l'Industrie, du Commerce, de l'Énergie et des Mines was split to form the Ministère de l'Énergie et des Mines and the Ministère de l'Industrie, du Commerce et des Télécommunications, which were the Government ministries responsible for overseeing the mineral industry of Morocco. Several state-owned companies played a role in mineral resource development (table 2). The Bureau de Recherches et de Participations Minières (BRPM) was responsible for the exploration for and the promotion of most mineral resources. Since its reorganization in 1996, the BRPM has spun off its interest in a number of mining operations and has retained equity interest in several mining companies. La Centrale d'Achat et de Développement de la Région Minière de Tafilalet et de Figuig (CADETAF) promoted the interests of artisanal miners in the Tafilalet and Figuig regions. The OCP managed phosphate mining and beneficiation. The Office National de Recherches et d'Exploitations Pétrolières (ONAREP) oversaw the natural gas and oil sector. The merger of the BRPM and the ONAREP was under consideration by the Parliament.

The private sector, whose ownership included domestic and international companies, played a significant role in the mineral industry. Groupe ONA (formerly Omnium Nord Africain) was the largest indirect private sector investor, primarily in the metals sector. ONA held 75.84% interest in Managem S.A., 49% interest in Axa Assurances Maroc, and 45.9% interest in Société Nationale d'Investissement S.A. Compagnie Royale Asturienne des Mines S.A. of Belgium owned Compagnie Minière de Touissit. Cimentos de Portugal SGPS SA, Ciments Français S.A., Holcim Ltd., and Group Lafarge held controlling interests in the local cement sector. A number of medium and small local firms were active in the industrial minerals sector. About 56 petroleum exploration or reconnaissance contracts were in force in 2002, most of which were held by joint-ventures of the state-owned ONAREP and international companies.

### Commodity Review

#### Metals

**Cobalt.**—Compagnie de Tifnout Tiranimine (CTT) mined cobalt ore, which in 2002 graded about 7.9% cobalt, at Bou Azzer. Its former sister company Société Cobalt Métallurgie Bou-Azzer had begun to reprocess cobalt tailings at the Hydro

<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited section.

<sup>2</sup>Includes production from Western Sahara.

<sup>3</sup>Where necessary, values have been converted from Moroccan dirhams (DH) to U.S. dollars (US\$) at the average rates of DH10.98=US\$1.00 for 2002 and DH11.30=US\$1.00 for 2001.

I plant at Guemassa in 1996. The Hydro I plant's output was about 250 metric tons per year (t/yr) of cobalt cathodes. Société Cobalt Métallurgie Bou-Azzer subsequently built the adjacent Hydro II plant, which in 1999 began to process cobalt ore. Hydro II produced about 1,100 t/yr of cobalt cathode. Capacities were estimated from company production data. In 2000, Société Cobalt Métallurgie Bou-Azzer merged with CTT. CMBA was retained as the trade name for CTT's cobalt cathodes. In December, CTT started up a pilot plant that will produce cobalt chemicals at the Guemassa facility.

**Gold.**—The BRPM was exploring a number of gold deposits, which included the Boutonniere d'Akka, Mounjoud, Ouarzazate, Qalat M'Gouna, Tafrent, and Tazekka prospects. In 2002, the BRPM and Ormonde Mining plc of Ireland initiated a gold exploration joint venture on 14 exploration permits in the Tamalalt project area. The joint venture drilled the Jbel Malek prospect and identified additional drill targets.

**Iron and Steel.**—In July, Société Nationale de Sidérurgie (Sonasid) began production from the 300,000-metric-ton-per-year (t/yr)-design-capacity Jorf Lasfar rolling mill. The plant started production of hot-rolled metal sections and steel-reinforcement bars for concrete at an initial rate of 75,000 t/yr and was projected to reach full capacity in 2004. Based on a positive feasibility study, Sonasid proposed to invest \$86 million in a 640,000-t/yr-capacity electric-arc furnace at the company's Jorf Lasfar facility. Initial crude steel production was expected in 2005 (CFG Group, 2002; Group ONA, 2003, p. 17; MEsteel.com, 2003§).

Maghreb Steel S.A. commissioned a \$43.47 million 250,000-t/yr cold rolling mill at Tit Mellil, Casablanca. The company also began the installation of an additional 130,000-t/yr galvanizing line on the site to supplement its existing 100,000 t/yr galvanizing line (MEsteel.com, 2003§). In addition to the larger steel bar and sheet rolling companies, the iron works of Acieries et Fonderies de Skhirat in Skhirat and Fonderie Acieries du Maroc in Aïn Sbaâ Hay Mohammadi did some iron and steel drawing and rolling. BatiFer S.A. of Casablanca, Société Industrielle des Tubes Aciers S.A. of Tangiers, Société Tube et Profile of Ain Sebaa, Société Maghrebine du Tube et Sanitaire S.A. of Casablanca, and Feni Brossette S.A. of Casablanca manufactured steel pipes and tubes.

**Lead and Zinc.**—A subsidiary of ONA divested its 50% equity interest in Compagnie Minière de Touissit (CMT), which was the country's largest lead producer. ONA's former partner Compagnie Royale Asturienne des Mines S.A. of Belgium acquired 100% interest in CMT. In March, Compagnie Minière de Guemassa (CMG) launched the Drâa Sfar zinc mine project, which was about 15 kilometers (km) west of Marrakech. In July, CMG began production at the \$18 million zinc oxide plant it had built at its Guemassa facility, about 35 km south of Marrakech. The zinc oxide output will be exported. In December, there was an accidental release of 20,000 cubic meters (m<sup>3</sup>) of material because of a tailings dam failure at the Guemassa facility. The recently built tailings dam had contained about 400,000 m<sup>3</sup> of material from the CMG concentration

plant, which processed the company's copper, lead, and zinc ore as well as liquids from CTT's cobalt plants.

**Silver.**—In 2002, infrastructure improvements and the development of the central shaft allowed Société Metallurgique d'Imiter (SMI) to increase ore output to 1,500 metric tons per day (t/d) from 1,200 t/d. SMI's exploration efforts in 2002 resulted in the addition of 402 metric tons (t) of silver to the company's reserves, which reached 3,884 t (silver content of ore) (Société Metallurgique d'Imiter, 2003).

### **Industrial Minerals**

**Cement.**—Asment de Temara expected to complete the expansion of the production capacity of its cement plant to 1.2 million metric tons per year (Mt/yr) by 2003 (Asment de Temara, undated). Lafarge Ciments new \$103 million 700,000-t/yr-capacity cement plant in Tétouan was expected to be commissioned in mid-2003 (Lafarge, 2003, p. 79; Reuters Ltd., 2003§). Société Holcim (Maroc) S.A., formerly Cimenterie de l'Oriental, operated two cement plants and two clinker grinding mills. A sister company (Holcim Granulats) opened a 1-Mt/yr-capacity aggregates quarry at Benslimane near Casablanca (Arabicnews.com, 2003§; Holcim Maroc S.A., 2003§). The Government proposed to begin a multiyear housing and road construction program in 2003, which the cement sector anticipated would increase demand for cement.

**Phosphate Rock.**—In 2002, the OCP continued to expand its phosphate rock mining and processing capacity, especially at the Boucraa and Gantour mining centers. The OCP also initiated expansions of the diammonium phosphate fertilizer and phosphoric acid plants at Jorf Lasfar and Safi. Euro-Maroc Phosphore Co. proposed to build a \$50 million 120,000-t/yr (P<sub>2</sub>O<sub>5</sub> content) purified phosphoric acid plant next to its existing 120,000-t/yr plant. The new unit was expected in production by yearend 2003 (Société Chimique Prayon-Rupel (2003§).

**Silicon.**—Moroccan imports of silicon are expected to increase as the 215-million-integrated-circuit-per-day-capacity manufacturing plant at Bouskoura reaches full capacity. The \$300 million fabrication facility was the third plant in Morocco operated by STMicroelectronics NV of France and Italy. In 2002, Moroccan exports of semiconductors and related devices to the United States were valued at \$96 million compared with about \$82 million in 2001 (Berkshire Corp., 2001§; U.S. Census Bureau, 2003§).

### **Mineral Fuels**

Morocco's petroleum refining company Société Anonyme Marocaine de l'Industrie du Raffinage (SAMIR) operated two refineries, the 129,000-barrel-per-day (bbl/d) refinery at Mohammedia and the 26,000-bbl/d refinery at Sidi Kacem. In 2002, SAMIR had initiated a \$700 million upgrade of the Mohammedia refinery which would raise capacity to about 165,000 bbl/d; however, in November, a flood and fire caused an estimated \$150 million damage to the Mohammedia

facility. Partial production at Mohammedia was subsequently restarted and maintained at about 40,000 bbl/d through yearend. Restoration of full throughput capacity, initially estimated to take 6 months, was not expected to be attained until mid-2004 (Middle East Economic Digest, 2002; Middle East North Africa Financial Network, 2003§).

## References Cited

- CFG Group, 2002, Sonasid: Casablanca, Morocco, CFG Group company analysis, July, 15 p.
- Groupe ONA, 2003, Rapport annuel 2002: Casablanca, Morocco, Groupe ONA, 91 p.
- Jasinski, S.M., 2003, Phosphate rock: U.S. Geological Survey Mineral Commodity Summaries 2003, p. 124-125.
- Lafarge, 2003, Annual report—2002: Paris, France, Lafarge, 168 p.
- Lazare, Michel, Fanizza, Domenico, Sarr, Abdourahmane, and Mikhael, Marwan, 2003, Morocco—Statistical appendix: Washington, DC, International Monetary Fund Country Report No. 03/163, June, 57 p.
- Middle East Economic Digest, 2002, International contractors line up for refinery upgrade: Middle East Economic Digest, v. 46, no. 43, October 25, p. 14.
- Société Metallurgique d'Imiter, 2003, SMI—Resultats au 31 Decembre 2002—Resultat d'exploitation de 103 MDH decouverte de 400 tonnes d'argent metal: Casablanca, Morocco, Société Metallurgique d'Imiter press release, March 21, 2 p.

## Internet References Cited

- Asment de Temara, [undated], Asment—Le mot du président, accessed July 23, 2003, at URL <http://www.asment.co.ma/motdupresident.htm>.
- Arabicnews.com, 2003 (March 19), Moroccan cement plant reports us\$ 199 mln in sales, accessed May 25, 2003, at URL <http://www.arabicnews.com/ansub/Daily/Day/030319/2003031922.html>.
- Berkshire Corp, 2001 (April 3), STMicroelectronics opens new state-of-the-art back end plant in Morocco, accessed July 22, 2003, at URL <http://www.berkshire.com/resources/news042001.html>.
- Direction de la Statistique, 2003a, Opérations avec l'extérieur, accessed August 4, 2003, at URL <http://www.statsitc.gov.ma/morocco11.html>.
- Direction de la Statistique, 2003b, Territoire et population, accessed July 22, 2003, at URL <http://www.statsitc.gov.ma/morocco1.html>.
- Holcim Maroc S.A., 2003, Découvrez-nous, accessed July 23, 2003, at URL [http://www.holcim.com/MA/FR/oid/1610637650/channel\\_id/8261/module/gnm0/jsp/templates/editorial/editorial.html](http://www.holcim.com/MA/FR/oid/1610637650/channel_id/8261/module/gnm0/jsp/templates/editorial/editorial.html).
- International Monetary Fund, 2003a (April), Selected world aggregates, World Economic Outlook Database, accessed April 14, 2003, at URL <http://www.imf.org/external/pubs/ft/weo/2003/01/data/w1.csv>.
- International Monetary Fund, 2003b (April), Shares of aggregate GDP based on purchasing power parity (PPP) valuation of country GDP, World Economic Outlook Database, accessed April 14, 2003, at URL [http://www.imf.org/external/pubs/ft/weo/2003/01/data/ppp\\_a.csv](http://www.imf.org/external/pubs/ft/weo/2003/01/data/ppp_a.csv).
- MESteel.com, 2003 (July 5), Sonasid investing 97 million euro in new expansion, accessed August 8, 2003, at URL <http://steelmillsoftheworld.com/news/newsdisplay.asp?sno=472>.
- Middle East North Africa Financial Network, 2003 (February 2), Moroccan refinery repairs to take 18, not 6 months, accessed February 13, 2003, at URL [http://www.menafn.com/qn\\_print.asp?StoryID=13286&subl=true](http://www.menafn.com/qn_print.asp?StoryID=13286&subl=true).
- Reuters Ltd., 2003 (March 18), Morocco's Lafarge 2002 profit up 16 percent, accessed March 24, 2003, at URL <http://www.zawya.com/Story.cfm?id=1048006642nL18379097&Section=Countries&page=Morocco>.
- Société Chimique Prayon-Rupel, 2003, EMAPHOS doubles its purified phosphoric acid capacity, accessed July 31, 2003, at URL <http://www.prayon.com/angalis/news/emphos.htm>.
- U.S. Census Bureau, 2003, U.S. imports from Morocco from 1998 to 2002 by 5-digit end-use code, accessed August 5, 2003, at URL <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c7140.html>.

## WESTERN SAHARA

In 2002, the United Nations (U.N.) continued its years-long effort to organize a referendum to allow the approximate 256,000 inhabitants of Western Sahara to choose between independence or integration with Morocco. All trade and economic activities in the 266,000-km<sup>2</sup> Western Sahara territory were administered by the Moroccan Government (U.S. Central Intelligence Agency, 2002§).

The open pit phosphate rock mine at Boucraa, operated by the OCP, dominated the mineral industry of Western Sahara; however, the controversy surrounding oil exploration permits for offshore Western Sahara that had been awarded to Kerr-McGee Corp. of the United States (Boujdour block) and TotalFinaElf S.A. of France (Dakhla block) by ONAREP in 2001 received more news coverage. In February, the U.N. released a legal opinion that the exploration contracts were not illegal; however, subsequent exploration and development, if it were “in disregard of the interests and wishes of the people of Western Sahara,” would violate international legal principles (United Nations, 2002, 2003§). In May, the Government of the Saharawi Arab Democratic Republic signed an agreement for Fusion Oil & Gas NL of Australia to evaluate essentially the same offshore acreage as the Boujdour and Dakhla blocks. Fusion was authorized 16 months to review available geologic and geophysical data. Also in May, Kerr-McGee and TotalFinaElf awarded TGS-NOPEC Geophysical Co. of Norway the contract for seismic data acquisition and interpretation offshore Western Sahara. Seismic shooting began in May. TGS-NOPEC was subsequently the target of a negative publicity campaign to force the company to void the Western Saharan contract (TGS-NOPEC Geophysical Co., 2002).

## References Cited

- TGS-NOPEC Geophysical Co., 2002, TGS-NOPEC comments further on Western Sahara activity: Naersnes, Norway, TGS-NOPEC Geophysical Co. press release, November 25, 1 p.
- United Nations, 2002, Letter dated 29 January 2002 from the Under-Secretary-General for Legal Affairs, the Legal Counsel, addressed to the President of the Security Council: New York, New York, United Nations Security Council S/2002/161, February 12, 6 p.

## Internet References Cited

- U.S. Central Intelligence Agency, 2002, Western Sahara, World Factbook 2002, accessed August 10, 2003, at URL <http://www.odci.gov/cia/publications/factbook/gfeos/wi.html>.
- United Nations, 2003 (February 5), Western Sahara—UN legal counsel renders opinion on oil prospecting contracts, United Nations News Service, accessed August 9, 2003, at URL <http://www.un.org/apps/news/storyAr.asp?NewsID=2806&Cr=Western&Cr1=Sahara>.

TABLE 1  
MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	1998	1999	2000	2001	2002 <sup>p</sup>
METALS					
Antimony:					
Concentrate, gross weight	350 <sup>e</sup>	600	--	--	--
Sb content	160 <sup>e</sup>	250	--	--	--
Sodium antimonate	435	478	548	436	532
Cobalt:					
Concentrates, gross weight	2,874	9,488	14,341	15,725 <sup>r</sup>	16,896
Co content	287	863	1,305	1,300 <sup>e</sup>	1,300
Metal <sup>4</sup>	242	472	967	1,337	1,200 <sup>e</sup>
Copper:					
Concentrates, gross weight	26,780	25,260	23,150	19,120	17,799
Matte, gross weight	2,841	2,212	2,117	1,580	2,016
Cu content, concentrates and matte	8,200	7,747	7,080	5,800	5,500
Gold kilograms	450 <sup>e</sup>	--	505	1,191 <sup>r</sup>	2,746
Iron and steel:					
Iron ore:					
Gross weight	9,285	6,625	6,462	7,976 <sup>r</sup>	1,628
Fe content <sup>c</sup>	6,220 <sup>4</sup>	3,600 <sup>r</sup>	3,500 <sup>r</sup>	4,300 <sup>r</sup>	800
Metal: <sup>c</sup>					
Pig iron	15,000	15,000	15,000	15,000	15,000
Steel, crude	5,000	5,000	5,000	5,000	5,000
Lead:					
Concentrate:					
Gross weight	115,042	114,184	117,535	110,906	88,581
Pb content	79,300	79,900	81,208	76,747 <sup>r</sup>	75,000
Cupreous matte, Pb content <sup>c</sup>	600	600	600	500 <sup>r</sup>	600
Metal:					
Smelter, primary only	65,000 <sup>e</sup>	65,209	66,812	58,178	71,840
Refined:					
Primary	60,929	65,209	66,812	58,178	71,840
Secondary <sup>c</sup>	3,000	3,000	3,000	3,000	3,000
Total <sup>c</sup>	64,000	68,000	70,000	61,000	75,000
Manganese ore, largely chemical-grade	28,332	29,150	25,830	13,757	18,064
Mercury <sup>c</sup>	10	10	10	10	9
Silver:					
Ag content of concentrates and matte kilograms	66,531	51,197	43,200 <sup>r,e</sup>	42,400 <sup>r,e</sup>	57,000 <sup>e</sup>
Ag content of mine and smelter bullion do.	240,412	226,692	246,204 <sup>r</sup>	238,043 <sup>r</sup>	220,000 <sup>e</sup>
Total do.	306,943	277,889	289,000 <sup>e</sup>	280,000 <sup>r,e</sup>	276,789
Zinc concentrate:					
Gross weight	216,011	216,197	201,692	174,831	178,476
Zn content	112,000	111,703	103,064	89,339	91,000
INDUSTRIAL MINERALS					
Arsenic trioxide	1,000 <sup>e</sup>	2,000 <sup>e</sup>	4,426	6,026	5,469
Barite	353,438	328,945	343,557	471,102	469,934
Cement, hydraulic thousand tons	7,414	7,530	8,100	10,000 <sup>e</sup>	10,200 <sup>e</sup>
Clays, crude:					
Bentonite	33,311	36,528	43,152	71,741	58,754
Fuller's earth (smectite)	27,650	21,956	30,665	40,664	43,243
Montmorillonite (ghassoul)	3,180	2,750	2,476	2,270	2,329
Feldspar	18,332	1,112	6,052	8,979	19,401
Fertilizers thousand tons	2,132	2,111	2,441 <sup>r</sup>	2,719 <sup>r</sup>	2,602
Fluorspar, acid-grade	105,000	83,100	76,991	96,500	94,911
Gypsum <sup>e</sup>	450,000	450,000	475,000	550,000	600,000
Mica	600 <sup>e</sup>	210	1,897	--	--
Phosphate rock:					
Gross weight <sup>5</sup> thousand tons	23,587	22,163	21,463	21,983	23,041
P <sub>2</sub> O <sub>5</sub> content do.	7,850	7,500	7,200	7,400	7,700
Phosphoric acid do.	2,669	2,696	2,732 <sup>r</sup>	2,819	2,921

See footnotes at end of table.



TABLE 1--Continued  
MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES <sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	1998	1999	2000	2001	2002 <sup>P</sup>
INDUSTRIAL MINERALS -- Continued					
Salt:					
Rock	107,604	156,158	147,960	194,000 <sup>r,e</sup>	226,000 <sup>e</sup>
Marine <sup>e</sup>	40,000	40,000	40,000	40,000	40,000
Total <sup>e</sup>	148,000	196,000	188,000	233,816 <sup>r</sup>	266,064
Strontium minerals, celestite	-- <sup>r</sup>	--	7,539 <sup>r</sup>	1,879 <sup>r</sup>	3,780
Talc and pyrophyllite	12,000 <sup>e</sup>	14,655	12,522	27,246 <sup>r</sup>	39,612
MINERAL FUELS AND RELATED MATERIALS					
Coal, anthracite	269,100	129,200	30,810	1,908	322
Gas, natural:					
Gross million cubic meters	43	44	50 <sup>r</sup>	49 <sup>e</sup>	48 <sup>e</sup>
Dry <sup>e</sup> do.	38	39	44 <sup>r</sup>	43 <sup>r</sup>	42
Petroleum:					
Crude <sup>6</sup> thousand 42-gallon barrels	86 <sup>r</sup>	81 <sup>r</sup>	97 <sup>r</sup>	95 <sup>r,e</sup>	91 <sup>e</sup>
Refinery products:					
Liquefied petroleum gas do.	2,600	3,100	2,800	2,710 <sup>r</sup>	2,690
Gasoline do.	3,600	3,800	3,800	2,960 <sup>r</sup>	3,210
Jet fuel do.	2,500	2,200	2,200	900 <sup>r</sup>	1,090
Kerosene do.	600	800	800	880 <sup>r</sup>	620
Distillate fuel oil do.	16,700	18,700	18,000 <sup>r,e</sup>	21,970 <sup>r</sup>	17,330
Residual fuel oil do.	12,800	16,700	16,000 <sup>r,e</sup>	16,000 <sup>r</sup>	14,000
Other do.	8,500	5,300	5,000 <sup>r,e</sup>	1,500 <sup>r</sup>	1,450
Total do.	47,300	50,600	48,600 <sup>r,e</sup>	46,920 <sup>r</sup>	40,390

<sup>e</sup> Estimated. <sup>P</sup> Preliminary. <sup>r</sup> Revised. -- Zero.

<sup>1</sup> Includes data available through August 10, 2003.

<sup>2</sup> Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup> In addition to the commodities listed, perlite and a variety of crude construction materials are produced, but information is inadequate to make estimates of output levels.

<sup>4</sup> Cobalt electrowon from cobalt concentrates and tailings from the Bou Azzer Mine.

<sup>5</sup> Reported production from Morocco and Western Sahara.

<sup>6</sup> Series for 1998 to 2000 is based on reported crude oil and condensate production, in metric tons, as follows: 1998 --11,742; 1999--11,085; and 2000--13,106

TABLE 2  
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2002

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
MOROCCO			
Arsenic trioxide	Compagnie de Tifnout Tiranimine (CTT) (Managem S.A., 55.2%; Société Metallurgique d'Imiter, 20%)	Guemassa, Marrakech	6,100
Barite	Central d'Achat et de Développement de la Région Minière du Tafilalet et de Figuig (CADETAF) (artisanal miners)	Errachidia, Figuig, and Ouarzazate	16,000
Do.	Compagnie Marocaine des Barytes (COMABAR) [Norbar Minerals AS, 55%; Bureau de Recherches et de Participations Minières (BRPM), 45%]	Tlet Ighoud, Safi	160,000
Do.	do.	Zelmou, Figuig	110,000
Do.	Morocco Minerals Co.	Chemaia, Safi	NA
Do.	Ouiselsat Mines S.A.	Tazzarine, Ouarzazate	NA
Do.	Société de Commercialisation et d'Exploitation Minière d'Imoulasse (SCEMI)	NA	NA
Do.	Société Commerciale et Minière du Sahara (SOCOMIS)	Tichka	NA
Do.	Société de Recherches et d'Exploitation Minières Nadia	Tinitine, Marrakech	NA
Do.	Société Industrie Minière Marocaine (IMM)	Tichka, Marrakech	NA
Do.	Société Minière des Barytines d'Asni (SMBA)	NA	NA
Do.	Société Nord Africaine de Recherches et d'Exploitation des Mines d'Argana (SNAREMA)	Seksoua, Marakech	120,000
Do.	Société Nouvelle Union des Metaux Maroc (SNUMM)	Jbel Abdellah, Errachidia	12,000
Do.	Société Zenaga	Tinjdad, Errachidia	
Barite, chemical grade	Société Nord Africaine de Recherches et d'Exploitation des Mines d'Argana (SNAREMA)	Argana	30,000
Bentonite	Société Minière Bentonite d'Afarha S.A. [Grupo Tolsa of Spain, 80%; Bureau de Recherches et de Participations Minières (BRPM), 20%]	Aferha	9,200
Do.	Société d'Exploitation des Mines du Rif (SEFERIF) [Bureau de Recherches et de Participations Minières (BRPM), 100%]	Bou Hoed, near Ouixane	15,000
Do.	Compagnie Marocaine des Barytes (COMABAR) [Norbar Minerals AS, 55%; Bureau de Recherches et de Participations Minières (BRPM), 45%]	Azzouzet-Tidiennit	5,000
Celestite	Société Karia Mines	Jbel Kifane, Taounate	NA
Cement, portland	Asment de Temara (Cimentos de Portugal, 57.4%)	Kiln and mill at Temara	845,000
Do.	Société Lafarge Ciments S.A. (Lafarge Maroc, 69.2%; general public, 12.23%; Caisse de Dépôt et de Gestion, 8.25%; Islamic Development Bank, 5.46%)	Douar Laouameur kiln and mill south of Casablanca	2,000,000
Do.	do.	Cadem clinker mill at Meknes	1,000,000
Do.	do.	Tamuda kiln and mill, Tétouan	800,000
Do.	do.	Kiln and mill at Tangier	250,000
Do.	do.	Tétouan II kiln and mill	(1)
Do.	Société Holcim (Maroc) S.A. (Holcim Ltd. of Switzerland, 51%; general public, 35.2%; Islamic Development Bank, 13.8%)	Kiln and mill at Oujda	1,000,000
Do.	do.	Fès, Ras El Ma kiln and mill	1,200,000
Do.	do.	Fès, Doukkarat clinker mill	600,000
Do.	do.	Nador clinker mill	400,000
Do.	Société les Ciments du Maroc S.A. (CIMAR) (Ciments Français S.A., 58.3%; general public 8.97%; Caisse Interprofessionnelle Marocaine des Retraites, 7.78%; Banque Nationale pour le Développement Economique, 5.65%; Fonds d'Abu Dhabi pour le Développement Economique Arabe, 5.38%)	Kiln and mill at Agadir	1,220,000
Do.	do.	Kiln and mill at Marrakech	1,300,000
Do.	do.	Kiln and mill at Safi	850,000
Do.	do.	Laâyoune clinker mill	350,000
Clay	Société du Ghassoul et de ses Derives SEFRIOUI SA	Tamdafelt	NA
Do.	Antonio Reyes Mine	Haddou Ammar, Nador	NA
Coal, anthracite	Charbonnages du Maroc [Bureau de Recherches et de Participations Minières (BRPM), 98.89%]	Jérada <sup>2</sup>	650,000

See footnotes at end of table.

TABLE 2--Continued  
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2002

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
MOROCCO--Continued			
Cobalt, ore, gross weight	Compagnie de Tifnout Tiranimine (CTT) (Managem S.A., 55.2%; Société Metallurgique d'Imiter, 20%)	Bou Azzer, Ouarzazate	17,000
Cobalt, metal	do.	Guemassa, Marrakech	1,400
Copper, concentrate	Société Minière de Bou Gaffer (SOMIFER) [Bureau de Recherches et de Participations Minières (BRPM), 34.2%; Société Metallurgique d'Imiter, 36%; Managem S.A., 7.6%]	Bleida	50,000
Do.	Compagnie Minière de Guemassa (CMG) (Managem S.A., 74%; , 23.08%)	Douar Hajar Mine, Guemassa, Marrakech	18,000
Do.	Société de Développement du Cuivre de l'Anti-Atlas (SODECAT) [Bureau de Recherches et de Participations Minières (BRPM), 100%]	Tiout	4,500
Fluorspar, concentrate	Société Anonyme d'Entreprises Minières (SAMINE) (Managem S.A., 58%; Société Metallurgique d'Imiter, 42%)	El Hammam, Khémisset	120,000
Gold	Akka Gold Mining Company [Managem S.A., 70%; Bureau de Recherches et de Participations Minières (BRPM), 16.07%]	Iourim, Tiznit	3
Lead:			
Concentrate	Compagnie Minière de Guemassa (CMG) [Managem S.A., 74%; Bureau de Recherches et de Participations Minières (BRPM), 23.08%]	Douar Hajar Mine, Guemassa	29,900
Do.	Compagnie Minière de Touissit (CMT) (Compagnie Royale Asturienne des Mines S.A. of Belgium, 100%)	Touissit, Jérada	73,000
Metal <sup>3</sup>	Société des Fonderies de Plomb de Zellidja (SFPZ) (Zellidja S.A., 50.4%)	Oued El Heimer	70,000
Liquefied petroleum gas million metric tons	Société d'Exploitation des Mines du Rif (SEFERIF) [Bureau de Recherches et de Participations Minières (BRPM), 100%]	Bouhoua, Nador <sup>2</sup>	12
Manganese, concentrate	Société Anonyme Chérifienne d'Etudes Minières (SACEM) [Bureau de Recherches et de Participations Minières (BRPM), 43%; Compagnie Minière de l'Ogoué SA (COMILOG), 30%]	Imini, Ouarzazate	14,000
Perlite	Perlite Roche [Roche Investments, 70%; Bureau de Recherches et de Participations Minières (BRPM), 20%]	Tidiennit	20,000
Do.	Perlite Inc. (Roche Investments)	Expansion plant at Berrechid, near Casablanca	NA
Petroleum refinery products thousand 42 gallon barrels	Société Anonyme Marocaine de l'Industrie du Raffinage (SAMIR) (Group Corral Petroleum, 64.7%; general public, 35.3%)	Mohammedia	47,000
Do.	do.	Sidi Kacem	9,500
Phosphate rock	Office Chérifien des Phosphates (OCP) (Government, 100% )	Sidi Daoui Mine, Khouribga mining center	10,000,000
Do.	do.	Mera El Arech Mine, Khouribga mining center	6,000,000
Do.	do.	Benguerir open-pit mine, Gantour mining center	4,000,000
Do.	do.	Youssoufia underground mine, Gantour mining center	3,000,000
Do.	do.	Sidi Chennane Mine, Khouribga mining center	2,000,000
Phosphoric acid, P <sub>2</sub> O <sub>5</sub> content	Indio Maroc Phosphore S.A. [Office Chérifien des Phosphates (OCP) , 50%; K.K. Birla Group of India, 50%]	Jorf Lasfar	330,000
Do.	Office Chérifien des Phosphates (OCP)	Maroc Chimie I and II, Safi	270,000
Do.	do.	Maroc Phosphore I and II, Safi	1,100,000
Do.	do.	Maroc Phosphore III and IV, Jorf Lasfar	1,400,000
Phosphoric acid (purified), P <sub>2</sub> O <sub>5</sub> content	Euro-Maroc Phosphore Co. [Office Chérifien des Phosphates (OCP), 33%; Société Chimique Prayon-Rupel of Belgium, 33%; Chemische Fabrik Budenheim KG of Germany, 33%] general public, 24.28%)	Jorf Lasfar <sup>4</sup>	120,000

See footnotes at end of table.

TABLE 2--Continued  
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2002

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Salt, marine	Société Chérifienne des Sels (SCS) [Bureau de Recherches et de Participations Minières (BRPM), 50%; Société Nouvelle des Salins du Sine Saloum (SNSSS), 50%]	Lac Zima, Safi	30,000
Salt, rock	Société de Sel de Mohammedia (SSM) [Bureau de Recherches et de Participations Minières (BRPM), 100%]	Aïn Tekki, Mohammedia	226,500
Silver, ore	Société Metallurgique d'Imiter (SMI) (Managem S.A., 75.72%; general public, 24.28%)	Near Quarzazate	525
<b>Steel products:</b>			
Bars and sections	Société Nationale de Sidérurgie (Sonasid) (general public, 31.14%; Société Nationale d'Investissement S.A., 21.07%; Axa Assurances Maroc, 8.53%; Aceralia Redendos, 8.5%)	Jorf Lasfar	300,000
Rebar and wire rod	do.	Nador	540,000
Do.	do.	Casablanca	80,000
Cold-rolled sheet	Maghreb Steel S.A.	do.	250,000
<b>Talc and pyrophyllite</b>			
Pyrophyllite	Société Industrie Minière Marocaine (IMM)	Khénifra	NA
Talc	Société Zenaga	Tinjdad, Errachidia	NA
Do.	do.	Taliouine, Ouarzazate	NA
Zinc, concentrate	Compagnie Minière de Guemassa (CMG) [Managem S.A., 74%; Bureau de Recherches et de Participations Minières (BRPM), 23.08%]	Douar Hajar Mine, Guemassa	170,000
Do.	do.	Drâa Sfar	<sup>(1)</sup>
Do.	Société des Mines de Tennous (SOMITE)	Aguerd N'Tazoult, Azilal	NA
Do.	Société Mineral et Substances	Lalla Mimouna, Taza	NA
<b>WESTERN SAHARA</b>			
Phosphate rock	Phosphates de Boucraa S.A. [Office Chérifien des Phosphates (OCP), 65%]	Open pit mine, Boucraa mining center	2,000,000

NA. Not available.

<sup>1</sup>Under construction.

<sup>2</sup>Mines are being closed.

<sup>3</sup>SFPZ also refines silver and produces copper matte and sodium antimonate.

<sup>4</sup>A second purified phosphoric acid plant with a capacity of 120,000 metric tons per year was under construction.