

THE MINERAL INDUSTRY OF MOROCCO AND WESTERN SAHARA

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MOROCCO

Morocco remained the largest producer of nonfuel minerals among North African nations in 1994. Of these nonfuel minerals, phosphate rock and derivative products combined were the most important mineral commodity and source of foreign exchange produced in Morocco. Increased demand for phosphate rock in 1994, both domestic and foreign, caused a surge in Moroccan phosphate sales and exports. During 1994, the Government's planned offerings for privatization of certain elements of the mining sector were realized.

Phosphate mining accounted for 94% of a mining sector that produced a variety of minerals. Additionally, Morocco was a significant producer of antimony, barite, copper, fluorspar, iron ore, lead, manganese, salt, silver, and zinc.

Mining was Morocco's largest foreign exchange earner and usually accounted for between 3.5% and 6% of the gross domestic product (GDP) and 15% of employment in the industrial sector. Additionally, mining accounted for more than 9% of GDP if downstream products of the mineral industry were included. The GDP for 1994 was \$30.7 billion.²

Government Policies and Programs

Current mining legislation in Morocco is based on Mining Code Bill No. 1-73-412 of August 13, 1973. This legislative series is also known as the 1973 Law on Moroccanization, which had sections repealed in 1990 and 1992. In 1990, the mining law was revised so that the Government was required to respond within 2 months to any foreign investment proposal and, if not, the contract presumably would be null and void. Generally, any mining law revisions were intended to expedite the bureaucratic process. Additionally, under the revisions, if a foreign mining company determined that a deposit under investigation is uneconomic, it could withdraw from Morocco without penalty.

Regulations concerning the management of petroleum and natural gas resources were revised in June 1991 to provide further incentives for international companies. The revised law reduced the Government's share in agreements with international operators from 50% to 35%. Additionally, the law provided for corporate tax relief. Exploration activity would be fully deductible for more than 10 years for newcomer contracts and more than 3 years for preexisting

operators in Morocco. Upon the discovery of a commercial hydrocarbon resource, concessionary fees for the corporation are not required for the first 28 million barrels (Mbbbl) of oil or natural gas produced. Furthermore, the petroleum tax is waived covering the initial 3 years of production. To complement these new measures, exploration permit sizes were reduced to 2,000 square kilometers (km²) from 5,000 km², and the minimum duration of an agreement was reduced from 15 years to 8 years. In 1992, the Government abrogated the 1974 Moroccanization Law, which pertained to petroleum refining and distribution. These latter legal changes were designed to allow foreign companies to participate in the privatization of parastatals (companies or agencies owned or controlled wholly or partly by the government) in the petroleum sector. The Moroccan mining laws stipulate the conditions for investment for a foreign operator, which, in general, have become more liberal with the more recent amendments.

Environmental Issues

The most pressing environmental issue in Morocco was the pollution of the drinking water supply in the country's two most important river basins, the Sebou basin and Oum Er Rabia basin, from domestic, industrial, and agricultural sources. Silting of dams and the deterioration of other existing water infrastructure was a major concern. The World Bank recommended that investments should be made in repairing existing structures as opposed to financing new projects. An additional environmental issue currently being addressed in Morocco is the offshore dumping of phosphogypsum waste on the western coast of Morocco. The Government has a reforestation program for mining operations currently in force.

Production

Morocco is a major base metal producer in the Mediterranean basin. Morocco's base metal production had made impressive production increases from 1990 to 1993. However, decreases in base metal and silver production in 1994 were noted. The production decreases occurred despite steadily rising global market prices for lead beginning in late 1993 and continuing in 1994. Moroccan production declines for 1994 were due, in part, to restructuring and consolidation at some mines. Morocco remained a major world producer of

phosphate rock and fertilizers, including phosphoric acid, diammonium phosphate (DAP), and triple superphosphate (TSP). Total fertilizer production for 1994 was about 2 million metric tons (Mmt). (See table 1.)

Trade

Morocco remained the world's largest exporter of phosphate rock. Moroccan phosphate exports increased in 1994 to 9.5 Mmt from 8.4 Mmt in 1993. This export increase was the largest since 1988. According to the London Mining Journal, Morocco's share of the global phosphate rock export market increased in 1994 to 32.5%. The largest recipient of phosphate rock was Spain. The Government reported that the value of exported phosphate rock in 1993 was about \$256 million, surging to \$305 million in 1994.

Regarding base metal exports, the Government reported that the value of exported zinc in 1993 was about \$23.1 million, rising to \$41.2 million in 1994. The Government reported that the value of exported copper in 1993 was about \$21.4 million, rising to \$29.2 million in 1994; and that the value of exported lead in 1993 was \$4.3 million, rising to about \$17 million in 1994. As for precious metals, according to the Government, the value of exported silver in 1993 was about \$22 million, rising to \$31 million in 1994.

The Government and the United Nations reported that, in 1993, total Moroccan imports were valued at \$6.8 billion and total exports were valued at \$3.8 billion. For 1994, total Moroccan imports were valued at \$6.7 billion with total exports valued at \$4.1 billion. Morocco's largest trading partners were overwhelmingly members of the European Union, with more than 60% of Moroccan imports and exports.

Structure of the Mineral Industry

The mining industry of Morocco is controlled by the Government, specifically the Directorate of Mines, which is a department of the Ministry of Energy and Mines. The Directorate of Mines is charged with the elaboration and application of the national mining policy. It drafts and applies legislation and regulations pertaining to mining activities. The Directorate of Mines also controls the various parastatals and public companies involved in the mining industry, including the promotion of mining. Additionally, the Directorate of Mines manages mining properties, labor concerns, commercialization, and studies in mining, mineralogy, and metallurgy. Geographic administration is designed so that 15 different mining districts exist within Morocco. In total, the mining industry employed about 60,000 people, including 6,800 engineers and technicians. Approximately 12,000 laborers were involved in artisanal mining.

Established in 1928, the Bureau de Recherches et de Participations Minières (BRPM) is an autonomous public corporation involved directly or indirectly in the majority of all Moroccan mining enterprises, excluding hydrocarbons

and phosphates. BRPM employs about 1,330 people, including 150 engineers. Founded in 1920, the parastatal Office Cherifien des Phosphates (OCP) manages and controls phosphate mining and is the world's largest producer of phosphate rock. OCP controls all aspects of the phosphate industry, including research, exploitation, and the production of derivative products, such as fertilizers. OCP employs 30,000 people, including 700 engineers and technicians. Created in 1960, La Centrale d'Achat et de Développement de la Région Minière de Tafilalet et de Figuig (CADETAF) promotes the working of artisanal mines of barite, lead, and zinc in the regions of Tafilalet and Figuig. CADETAF provides technical, commercial, and social assistance to the artisanal miners. The Government parastatal that controls hydrocarbon exploration and production is the Office National de Recherches & d'Exploitations Pétrolières (Onarep).

Omnium Nord Africain (ONA) is the largest private company in Morocco. Additionally, ONA was one of the largest private African companies outside of South Africa. The company is active in four areas: agricultural distribution, finance, mining, and high technology. ONA's mining subsidiary, Pole Mines, is involved in four significant Moroccan mining ventures. Pole Mines' equity ventures include the polymetallic Douar Hajar Mine with Cie. Minière de Guemassa (CMG); the Bleida copper mine with Société Minière de Bou-Gaffer (SOMIFER); the world's only primary cobalt mine at Bou Azzer operated by Cie. de Tifnout Tiranimine (CTT); and the El Hammam fluorspar mine operated by Société Anonyme de Entreprises Minières (SAMINE). All of the latter joint ventures are with BRPM. The only other joint venture in which Pole Mines is not the sole operator is the silver mine at Imiter, operated by Société Metallurgique d'Imiter (SMI) with equity ownership by BRPM. Pole Mines also is involved in chemicals, engineering, contracting, mineral exploration, and transport.

The privatization program in Morocco is an ambitious one. Approximately 112 companies valued at \$2 billion are expected to be privatized by yearend 1995. (See table 2.)

Commodity Review

Metals

Lead and Zinc.—From May 1993 until yearend 1994, the Djebel Aouam Mine remained closed and subject to sale. Originally closed by Belgium's Union Minière, the company subsequently sold its 55.92% stake in Compagnie Royale Asturienne des Mines interests in the Djebel Aouam Mine to Compagnie Foncière du Château d'Eau, according to Metal Bulletin (August 15, 1994). Additionally, Compagnie Minière de Toussit, operator of the Toussit lead-zinc-silver mine, the largest in Morocco, underwent restructuring in 1994 and intended to expand production capacity.

Steel.—Privatization has been planned for a segment of the nation's steel making industry. By yearend 1994, the

Moroccan parastatal Société Nationale de Sidérurgie (Sonasid) had a steel mill in Nador which was slated for sale. Metal Bulletin (October 13, 1994) reported that Sonasid's profits for 1993 amounted to \$20 million. The mill currently produces about 420,000 metric tons per year (mt/a) of steel rebar and wire rod for the domestic market. Sonasid must import about 450,000 mt/a of iron and steel billet to meet its requirements. Sonasid stated that the billet was imported primarily from Europe, Poland, and the Commonwealth of Independent States. The Government hoped that through privatization, the mill can be upgraded with an electric arc furnace and a continuous caster.

Industrial Minerals

The Khouribga region, in west-central Morocco, was the area most extensively mined for phosphate in the country. Globally, the phosphate rock and derivative fertilizer industry experienced an upturn in demand in 1994. OCP reported that its facilities operated at 93% of capacity for 1994. Capacity upgrades have been few in recent years due to lowered demand and production, coupled with a lack of sufficient funding. Additionally, OCP intended to develop new open pit operations south of Khouribga and at Sidi Chennane to counter declining production at existing mines by 1996.

Mineral Fuels

Morocco is dearth in developed or producing hydrocarbon resources. Domestic crude oil production is negligible and the domestic consumption rate was steadily rising. Therefore, an overwhelming percentage of crude petroleum being consumed is imported. Hydrocarbon import costs total about \$1 billion a year. The refineries at Mohammedia and Sidi Kacem together processed about 44.8 Mbbl of petroleum products in 1993, the last year for which data were available. The refinery at Mohammedia was owned by Société Marocaine de l'Industrie du Raffinage (SAMIR) and has a total throughput refining capacity of 35 Mbbl of crude petroleum per year, as reported by the company. The refinery at Sidi Kacem was owned by Société Cherifienne des Petroles (SCP) and has a total throughput refining capacity of 11.4 Mbbl of crude petroleum per year, according to the company. Both companies have been slated for privatization and, as of yearend 1994, neither had been audited and no decision as to the type of sale had been made.

Reserves

The Government's estimated reserve of phosphate rock was approximately 22 billion metric tons, exceeding 50% of the world's known reserves. The Government estimated proven crude oil reserves at 2.1 Mbbl and proven natural gas reserves at 1.2 billion cubic meters (m³). Sufficient reserves existed to sustain base metal production into the 21st century.

Infrastructure

The railroad network in Morocco totaled 1,893 kilometers (km) of 1.435-meter standard-gauge single track. The highway infrastructure totaled 59,198 km, of which 27,740 km was paved. Crude oil pipelines totaled 362 km, and natural gas pipelines totaled 241 km. Morocco's merchant marine fleet was comprised of 51 ships totaling 487,479 deadweight tons. Of these ships, there were 3 petroleum tankers and 11 chemical tankers. Major Moroccan ports are at Agadir, Casablanca, Jorf Lasfar, Kenitra, Mohammedia, Nador, Safi, and Tangier. The nation's electrical generation capacity was 2,384 megawatts.

Outlook

Moroccan mineral industry development is affected by global commodity prices, particularly for phosphate rock and base metal production. For the near future, Morocco must diversify its manufacturing base with increased technology, expand export trade to markets other than western Europe, and further diversify foreign investment. Currently, foreign investment is dominated by France and Spain. Additionally, the Government must attract foreign petroleum exploration in the near term, in order to forestall a larger trade deficit caused by dependence on petroleum imports.

WESTERN SAHARA

Predominantly a hot, dry desert country, Western Sahara has a total land area of 266,000 km². The region has been claimed and administered by Morocco since the mid-1970's. In Western Sahara, annual rainfall is negligible and most foodstuffs must be imported. Economic activity, including all trade, is controlled by the Moroccan Government. Fishing and phosphate mining are the main industries and sources of revenue. The most significant mineral production in the region is from the phosphate mine at Bou Craa. Production data from Bou Craa are included in total Moroccan phosphate output. Total phosphate rock production from Bou Craa was about 1.5 Mmt in 1994.

¹Text prepared May 1995.

²Where necessary, values have been converted from Moroccan dirhams (DH) to U.S. dollars at a rate of DH8.48=US\$1.00.

Major Sources of Information

Association of African Geological Surveys
Association des Services Géologiques
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M. Beisaid, Institut de Géologie, Nouveau
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Major Publications

Le Secteur Minière Marocain Situation et
Perspectives, Ministère de l'Energie et
des Mines, Rabat, Morocco.
Statistique de Commerce Extérieur,
Rabat, Morocco.

TABLE 1
MOROCCO: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/ METALS	1990	1991	1992	1993	1994 e/
Antimony concentrate:					
Gross weight	426	374	438	400	400
Sb content	192	168	197	180	180
Chromite	300	500	500	500	500
Cobalt concentrate:					
Gross weight	1,830	2,950	4,200	3,600	4,000
Co content	194	325	461	397	440
Copper:					
Concentrates, gross weight	45,300	42,200	38,100	40,200	39,800
Matte, gross weight	2,320	2,500	2,200	1,550	1,700
Cu content, concentrates and matte	16,400	15,800	14,300	14,000	13,600
Gold: e/ kilograms	500	500	500	540	400
Iron and steel:					
Iron ore:					
Gross weight	148,000	98,700	82,600	66,300	64,000
Fe content	90,200	60,200	52,000	41,000	41,000
Metal: e/					
Pig iron	15,000	15,000	15,000	15,000	15,000
Steel, crude	7,200	7,200	7,000	7,000	7,000
Lead:					
Concentrate:					
Gross weight	95,500	102,000	105,000	112,000	104,000
Pb content	68,800	73,700	76,600	81,700	73,000
Cupreous matte, Pb content	604	648	566	402	442
Metal:					
Smelter, primary only	64,500	70,600	68,600	69,100	61,000
Refined:					
Primary	64,000	70,000	68,000	69,000	69,000
Secondary e/	2,000	2,000	2,000	2,000	2,000
Total e/	66,000	72,000	70,000	71,000	71,000
Manganese ore, largely chemical-grade	49,500	59,300	44,300	42,600	31,400
Mercury, byproduct kilograms	20,000	20,000	20,000	20,000	20,000
Silver:					
Ag content of concentrates and matte do.	53,700	91,100	69,400	73,400	68,500
Ag content of mine and smelter bullion do.	187,000	205,000	144,000	236,000	257,000
Total do.	241,000	296,000	213,000	309,000	326,000
Zinc concentrate:					
Gross weight	36,900	47,700	43,000	126,000	147,000
Zn content e/	18,800	24,000	22,600	65,400	77,000
INDUSTRIAL MINERALS					
Barite	364,000	433,000	401,000	325,000	264,000
Cement, hydraulic thousand tons	4,200	5,770	6,340	6,300	6,300
Clays, crude:					
Bentonite	4,000	9,230	8,140	10,200	8,920
Fuller's earth (smectite)	45,200	37,600	38,000	38,700	22,800
Montmorillonite (ghassoul)	4,430	3,900	2,670	2,440	3,330
Feldspar e/	1,000	1,000	1,000	1,000	1,000
Fluorspar, acid-grade	86,500	74,600	85,500	70,100	85,000
Gypsum e/	450,000	450,000	450,000	450,000	450,000
Mica e/	1,500	1,500	1,500	1,500	1,500
Phosphate rock (includes Western Sahara) thousand tons	21,400	17,900	19,100	18,300	20,400
P ₂ O ₅ content do.	6,910	5,700	6,180	5,920	6,580
Salt, rock	125,000	109,000	165,000	170,000	177,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, anthracite thousand tons	526	551	576	604	650
Gas, natural:					
Gross million cubic meters	62	38	24	24	24
Dry do.	37	22	14	14	14
Petroleum:					
Crude thousand 42-gallon barrels	114	83	67	67	76
Refinery products: e/					
Distillate fuel oil do.	13,500	15,200	16,400	16,000	18,000
Gasoline do.	3,300	2,330	3,860	3,800	3,600
Jet fuel do.	1,830	1,500	1,700	1,700	1,700
Kerosene do.	365	341	351	350	390
Other do.	5,840	1,800	2,700	2,600	2,600

See footnotes at end of table.

TABLE 1--Continued
MOROCCO: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/		1990	1991	1992	1993	1994 e/
MINERAL FUELS AND RELATED MATERIALS--Continued						
Refinery products: e/--Continued:						
Refinery fuel and losses	thousand 42-gallon barrels	1,460	688	172	170	170
Total	do.	40,500	35,700	39,200	38,600	46,300

e/ Estimated.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Includes data available through May 1995.

3/ In addition to the commodities listed, a variety of crude construction materials is produced, but available information is inadequate to make reliable estimates of output levels. Limestone quarried for cement manufacture is substantial; however, information is inadequate.

TABLE 2
MOROCCO: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Metric tons unless otherwise specified)

Major commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Barite		Compagnie Marocaine des Barites (COMABAR) (50% BRPM)	Near Marrakech	270,000 concentrate.
Cobalt		Compagnie Tifnout Tiranimine (CTT) (40% BRPM)	Bou Azzer	5,000 concentrate, 150,000 ore.
Copper		Société Minière de Bou Saffer (SOMINA) (34% BRPM)	Bleida	50,000 concentrate.
Do.		Société Minière Marocaine (SOMIMA) (75% BRPM)	Quansimi	NA.
Do.		Société du Développement du Cuivre de l'Anti-Atlas (SODECAT) (99% BRPM)	Near Quansimi	NA.
Fluorspar		Société Anonyme de Entreprises Minières (SAMINE) (35% BRPM)	Near Khouribga	70,000 concentrate.
Lead		Compagnie Minière de Guemassa (CMG) (74% ONA, 26% BRPM)	Near Marrakech	130,000 Zn concentrate, 32,000 Pb concentrate, 12,000 Cu concentrate.
Do.		Compagnie Minière de Touissit (CMT) (50% Compagnie Royale Asturienne des Mines S.A., Belgium)	Touissit	73,000 concentrate.
Do.		Société de Développement Industriel et Minière (50% BRPM)	Zeida	40,000 concentrate.
Manganese		Société Anonyme Cherifienne d'Etudes Minières (SACEM) (43% BRPM)	Near Quarzazate	130,000 concentrate.
Phosphate	million metric tons	Office Cherifien des Phosphates (OCP) (Government, 100%)	Khouribga and Youssoufia	25 concentrate.
Silver		Société Metallurgique D'Imiter (SMI) (BRPM, 69%, ONA, 31%)	Near Quarzazate	73,000 ore.

NA Not available.