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MOROCCO AND WESTERN SAHARA [ADVANCE RELEASE]

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The Mineral Industries of Morocco and Western Sahara

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MOROCCO

Morocco's geology has been subdivided into four structural domains or provinces. These are, from the south of the country to the north, the Anti-Atlas domain, the Meseta domain, the High Atlas domain, and the Rif domain. The Anti-Atlas domain contains occurrences of manganese, precious metals (gold and silver), and strategic metals (cobalt, tin, titanium, and wolfram). The High Atlas domain (the Atlas Belt) contains occurrences of barite, copper, iron, lead, manganese, and zinc. The Rif domain contains occurrences of antimony, smectic clays, strategic metals (listed above), and zinc. Natural gas and petroleum occur on the offshore Atlantic Margin although no significant discoveries had been made by yearend 2011. The Atlantic Margin of Morocco was little explored in terms of drilling; only 34 wells had been drilled since 1968 (Office National des Hydrocarbures et des Mines, 2011b).

Mining companies have cited Morocco's long mining history, well-developed infrastructure, low sovereign risk, low mining taxation rate of 17.5%, and mining royalty of 3% as attributes that have encouraged them to invest in mining (Pham Mining, 2011). Foreign company participation in the mineral industry, foreign ownership of mining facilities, and repatriation of profits were allowed by the Government. The country has stable political and financial systems (Pham Mining, 2011).

Minerals in the National Economy

The country's mining sector continued to grow in 2011. Morocco's mineral sector was the leading foreign exchange earning sector for the Government; it accounted for about 35% of foreign trade and contributed about 5% of the gross domestic product. The diversity and value of the exploited minerals enabled the Moroccan mining sector to play a key role in the national economy. The phosphate industry especially continued to be a major source of export earnings for the Government. Morocco was the world's third ranked producer of phosphates after China and the United States (Arab Greek Chamber, 2011).

Morocco was home to about 90 mining companies that produced a variety of minerals. The country hosts several well-known deposits, including Bou-Azzer, which was the world's only deposit where cobalt was mined as a primary product, and the Igoudrane and Imiter deposits, which contain significant silver resources. The phosphate deposits that were owned by the Office Chérifien des Phosphates [Office of Moroccan Phosphates] (OCP), contained about 75% of the world's estimated total phosphate reserves (Business Monitor International, 2011).

Government Policies and Programs

The Government agency responsible for oversight of the mineral industry is the Ministère de l'Industrie, du Commerce, de l'Energie et des Mines [Ministry of Industry, Trade, Energy, and Mines]. The Office National des Hydrocarbures et des Mines [Office of Petroleum and Mines] (ONHYM) is the primary agency responsible for the exploration and promotion of national mineral resources. The ONHYM was created by the merger of the Bureau de Recherches et de Participations Minières [Office of Research and Mining Investments] and the Office National de Recherches et d'Exploitations [Office of Research and Development]. All minerals are the property of the Government, which issues permits and licenses for the exploration and exploitation of the mineral resources. Mining legislation is based on the Mining Code Bill No. 1–73–412 of August 13, 1973, and is enforced through executive orders and the Directorate of Mines. The Office National de Recherches et d'Exploitations Petrolieres (Office of Research and Petroleum Exploitation) (ONAREP) is responsible for overseeing the energy sector (Business Monitor International, 2011).

Production

In terms of the value of production, phosphate rock was Morocco's most important mineral and accounted for the majority of the country's mining output value. In addition to phosphate rock, the country produced a wide range of minerals, including barite, clays, cobalt, copper, fluorspar, iron ore, lead, salt, silver, talc, and zinc. The level of production of most mineral commodities in 2011 remained more or less the same as in 2010, except for notable increases in the production of barite and iron ore and decreases in the production of arsenic and cobalt (table 1).

Morocco produced 14% of the world's output of phosphate rock, 8% of the world's output of barite, 3% of the world's output of cobalt, and 1% of the world's output of fluorspar (Jasinski, 2012; Miller, 2012a, b; Shedd, 2012).

Structure of the Mineral Industry

There was little change in the structure of the mineral industry in 2011. Mineral production continued to be dominated by the private sector, with the exception of phosphates, which was a state monopoly. Table 2 is a list of major mineral industry facilities, their capacities, and their locations.

Mineral Trade

Morocco's trade was based on various free trade agreements that the country had signed with its trading partners including the United States. U.S. exports to Morocco were valued

at about $2.8 billion in 2011. This total included, in order of value, $532 million for fuel minerals, $117 million for petroleum products, $74 million for iron and steel products, and $40 million for metallurgical-grade coal (U.S. Census Bureau, 2011a).

U.S. imports from Morocco were valued at about $996 million in 2011. This total included, in order of value, $302 million for sulfur and nonmetallic minerals, $53 million for petroleum products, $32 million for other precious metals, and $7 million for finished metal shapes, except steel (U.S. Census Bureau, 2011b).

Commodity Review

Metals

Cobalt.—The Bou-Azzer mining district was one of the main producers of cobalt in the world in 2011. The cobalt-nickel deposits in Morocco are associated with arsenic in narrow vein structures found at the contact of a serpentine and quartz-rich diorite and Precambrian volcanic rocks. The serpentines are the major source rock for cobalt. The cobalt-nickel ore has undergone phases of brecciation and phases of recrystallization related to late Pan-African and Hercynian orogenies, which produced the various shapes of the ore bodies: flat lenses, lodes, stock works, and veins. The total Bou-Azzer deposit is composed of about 60 ore bodies, all of which were spatially associated with serpentines of a Neoproterozoic ophiolite sequence in contact with propylitized quartz diorite and sedimentary and volcaniclastic rocks (Ahmad, Arai, and Ikenne, 2009, p. 249–266).

Compagnie de Tifnout Tiranimine Managem S.A. (CTT Managem) was a subsidiary of Société Nationale d'Investissement [National Investment Co.] and specialized in the evaluation of cobalt deposits and the production of cobalt. CTT Managem continued to mine cobalt ore at the Bou-Azzer underground mine located 35 kilometers (km) south of Ouarzazate in southern Morocco in the central Anti-Atlas Mountain range. In 2011, Morocco was the only country in which cobalt was mined from arsenide ores as a primary mineral commodity (CorporateInformation.com, 2011).

Gold.—In 2011, Maya Gold and Silver Inc. of Canada continued exploration of its Amizmiz project. The main objectives of the exploration programs were to evaluate high-grade gold areas in its 80-square-kilometer (km^2) exploration permit in southwestern Marrakech Province. Maya Gold and Silver Inc. of Canada filed a National Instrument (NI) 43–101 Standards of Disclosure for Mineral Projects technical report that provides an overview of the necessary work and requirements to initiate the pre-work program at the Amizmiz project. Drilling was continuing at Amizmiz with a 2,500-meter (m) drill program focused on the TRN and AZ zones to better define the resource estimate (Boily, 2011).

Silver.—In terms of value, silver was the second ranked mineral commodity in Morocco after phosphate. Silver occurs both as a primary metal in ore deposits and as a byproduct of cobalt, copper, lead, and zinc operations. The silver mines of Société Metallurgique d'Imiter were located in Imiter and Igoudrane in the Anti-Atlas region. The Imiter mines had a processing capacity of about 300,000 metric tons per year (t/yr) whereas the Igoudrane mines had a processing capacity of about 500,000 t/yr (table 2).

Maya (85%) announced that it had entered into a joint-venture agreement with ONHYM (15%) for the Zgounder Mine, which is located 150 km south of Marrakech in the Anti-Atlas Mountains of central Morocco. ONHYM reported that historical reserves and resources as reported in 2004 were estimated to be 582,000 metric tons (t) of mineral resources at an average grade of 361 grams per metric ton (g/t) silver with an estimated additional 500,000 t of tailings at an average grade of 125 g/t silver. Maya stated that it was not treating the historical estimates as current reserves or mineral resources because they were prepared before the implementation of NI 43–101 and were not compliant with current reporting standards. Maya planned to commission a NI 43–101 report. Maya and SGS Canada Inc. were preparing a program to further explore the property, develop infrastructure, and restart the underground operations (Marketwire, 2011).

Tin.—Kasbah Resources Ltd. of Australia acquired the rights to the Achmmach tin project by completing a feasibility study and continuing development of the project. Achmmach is located in the El Hajeb region in the Central Hercynian Massif about 140 km southeast of Rabat. The project was composed of two exploitation permits, PE 2912 and PE 193172, which covered 32 km^2 at Achmmach.

Kasbah Resources strategy was to increase the size of the deposit's identified resource, prove the economics, de-risk the project, and advance Achmmach to a development decision. According to Kasbah Resources, the Achmmach project represented one of the largest undeveloped tin deposits in the world (Kasbah Resources Ltd., 2011).

Industrial Minerals

Clay and Shale.—Clay minerals found in Morocco include attapulgite, kaolin, and sepiolite. The Ait Ali attapulgite prospect is located 25 km north of Taourit in the Tertiary basin. The Tertiary basin consists of a Neogene series of blue marl and a sandy littoral facies. Horizons of clays and marls with attapulgite and sepiolite are located in the volcano-sedimentary series of the Neogene. The Jbel Zerhoun kaolin-silica prospect is located 25 km north of Meknes in the sandy sediments of the Miocene age Bajocian formation in the Jbel Zerhoun sector. These prospects were considered suitable for open pit mining (Office National des Hydrocarbures et des Mines, 2011a).

Phosphate Rock.—Phosphate rock is found mainly in the western part of Morocco. The Government's OCP was the country's sole producer of phosphate rock, most of which was exported. Higher revenues from the exports of phosphates and its byproducts helped the Government slow the annual rise in its trade deficit, despite higher crude oil and grain import bills. Morocco sits on about one-half of the world's phosphate reserves, including deposits in the disputed Western Sahara, and the country accounted for about one-third of the world's phosphate exports (Miningreview.com, 2011).

Tekfen Contracting Group of Turkey was planning to build a 240-km-long phosphate pipeline and to construct two diammonium phosphate (DAP) fertilizer plants with a capacity

of 850,000 t/yr each at a cost of about $620 million. The DAP facilities were expected to be completed in 2012, and the pipeline was expected to be completed in 2013 (Kaya, 2011).

FLSmidth & Co. A/S of Denmark received a €90 million ($114 million[1]) contract to supply equipment for a phosphate terminal for the Jorf Lasfar Port, which is located about 120 km south of Casablanca. The order included two sulfur ship loaders [each with a capacity of 2,000 metric tons per hour (t/hr)], two fertilizer ship loaders (each with a capacity of 2,000 t/hr), and two sulfur grab loaders (each with a capacity of 1,500 t/hr). FLSmidth was responsible for supplying all the equipment and ensuring that the equipment was complete and operational (FLSmidth & Co. A/S, 2011).

Talc.—ML Minerals plc, which was a subsidiary of Reuben Associates Group of the United Kingdom, received planning permission for its Nkob deposit, which is located about 80 km west of Ouarzazate. The deposit contained an estimated 85 million metric tons (Mt) of talc and calcite in a ratio of about 60% talc and 40% calcite. Startup production was scheduled for late 2012; production in the first year was planned to be 100,000 t, and production would be increased to 400,000 t by the fourth year. The Nkob project would be the first major talc and calcite deposit to be developed in Morocco (Elliot, 2011).

Mineral Fuels and Other Sources of Energy

Hydrocarbon occurrences in Morocco included a variety of liquid and gas accumulations, from dry gas in the Rharb Basin and condensate and light oil in the Essaquiera and Preif Basins, to heavy oil in the Tarfaya Basin. The potential for hydrocarbon resources was thought to exist in large yet-to-be-explored sedimentary basins of Morocco. Morocco had a well-developed infrastructure to support natural gas and petroleum exploration and production. Exploration activities were conducted year round (Mbendi Information Services (Pty) Ltd., 2011).

Natural Gas.—The Government of Morocco and the Government of Algeria signed a commercial contract for the delivery of 640 million cubic meters per year of natural gas for a period of 10 years. The natural gas was to flow through the Pedro Duran Farell pipeline that links Algeria's natural gas fields to the Iberian Peninsula through Morocco. The delivery was to supply the Ain Beni Mathar and the Tahaddart powerplants (Alexander's Gas & Oil Connections, 2011).

Petroleum.—The oil shale deposit at Timahdit is located in the channel of the Middle Atlas 35 km south of Azrou. The 76 cores drilled at the deposit identified estimated reserves of 42 billion metric tons of oil shale containing an estimated 15 billion barrels of oil in place. The oil shale deposit at Tarfaya contained an estimated 80 billion metric tons of oil shale containing an estimated 22 billion barrels of oil in place (Office National des Hydrocarbures et des Mines, 2011b, p. 9).

Solar Energy.—The Government's solar plan involves building five power stations, which would account for about 38% of the country's installed power generation by 2020. The World Bank approved loans totaling $297 million to help finance the first phase of a 500-megawatt (MW) solar power plant that would be among the largest in the world. The plant, which would be located at Quarzazate, would be the first in the Government's $9 billion solar energy program (Thomson Reuters, 2011).

[1]Where necessary, values have been converted from euro area euros (€) to U.S. dollars (US$) at a rate of €0.76=US$1.00.

Outlook

The Government is expected to continue to establish joint ventures with international companies, particularly in the natural gas and petroleum sectors. Also, Government policy is to increase the mining sector investments by both minor and major mining companies. The Government is expected to take steps to privatize selected state-owned mining assets and to launch reform programs within the mining sector to boost its competitiveness. Lead, silver, and zinc output is expected to decline owing to depletion of reserves. Tin might prove to be an increasingly key commodity for Morocco if Kasbah Resources decides to commission its mine in the foreseeable future.

The OCP is expected to encourage foreign investment in the phosphate sector. The phosphate industry will likely continue to dominate Morocco's mineral sector for the next 6 to 8 years.

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WESTERN SAHARA

The issue of sovereignty for Western Sahara remained unresolved in 2011. The territory, which comprises a desert area bordering the Atlantic Ocean between Mauritania and Morocco, was contested by Morocco and the Saharawi Arab Democratic Republic (SADR) and the Polisario Front (Popular Front for the Liberation of the Saguia el Hamra and Rio de Oro), which is an independence movement based in Tindouf, Algeria. Western Sahara's economy was dependent on fishing, pastoral nomads, and phosphate mining.

TABLE 1

MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2007	2008	2009	2010	2011[e]
METALS						
Antimony, sodium antimonate[e]		500	500	400	400	400
Cobalt:						
Concentrates, gross weight		20,800	20,200	26,100	31,095	21,587 [3]
Co content		1,768 [e]	1,717	1,600	3,130	2,159 [3]
Metal[4]		1,591	1,791	1,600	1,545 [r]	1,518 [3]
Copper:						
Concentrates, gross weight		19,900	21,100	42,100	43,300	42,975 [3]
Cu content, concentrates		5,572	5,055	12,615	12,690	12,893 [3]
Gold	kilograms	771 [3]	587	600	650	520 [3]
Iron and steel:						
Iron ore:						
Gross weight		48,000	22,900	30,500	44,665	78,926 [3]
Fe content (54%)		21,600 [r]	12,366	16,470	24,119	42,620
Metal:						
Pig iron[e]		15,000	15,000	15,000	15,000	15,000
Steel, crude		325,000 [e]	478,000	479,000	455,000	460,000
Lead:						
Concentrate:						
Gross weight		58,600 [r, 3]	50,000	47,800	46,373	43,821 [3]
Pb content		41,976 [3]	33,477	27,000	32,461	30,675 [3]
Cuprous matte, Pb content[e]		600	600	600	600	480
Metal:						
Smelter, primary only		55,000 [e]	50,000	50,000	50,000	50,000
Refined:						
Primary		44,700 [e]	38,000	36,000	38,237	36,469 [3]
Secondary[e]		3,000	3,000	3,000	3,000	3 000
Total[e]		47,700	41,000	39,000	41,237	39,469
Manganese ore, largely chemical-grade		41,628 [3]	102,285	51,788	75,614	58,000
Mercury[e]		10	10	10	10	10
Nickel content of nickel sulfate		80 [e]	100	100	317	217 [3]
Silver, Ag content	kilograms	177,712 [3]	201,195	235,301	243,000	186,000
Zinc concentrate:						
Gross weight		111,100	161,500	88,400	87,360	90,129 [3]
Zn content		54,353	80,747	44,199	43,680	45,065 [3]
INDUSTRIAL MINERALS						
Arsenic trioxide		8,000 [e]	8,000	8,655	13,731	8,154 [3]
Barite, crude		664,700	725,060	586,937	572,429	650,000
Cement, hydraulic	thousand metric tons	12,792	14,047	14,519	14,000	14,000
Clays, crude:						
Bentonite		137,100	50,125	84,097	110,700 [r]	97,071 [3]
Fuller's earth (smectite)		121,700	140,875	132,110	82,570	85,000
Montmorillonite (ghassoul)		1,000 [e]	1,000	928	1,186	1,419 [3]
Feldspar[e]		28,000 [e]	28,000	28,000	-- [r]	43,889 [3]
Fertilizers[e]	thousand metric tons	2,400	2,400	2,520	3,713	4,350 [3]
Fluorspar, acid-grade		78,817	56,724	69,091	75,380	79,207 [3]
Gypsum[e]		600,000	600,000	600,000	600,000	600
Phosphate rock:						
Gross weight[5]	thousand metric tons	27,834 [3]	24,861	18,307	26,603	28,052 [3]
P_2O_5 content	do.	8,700 [e]	8,000	6,000	8,500	9,200
Phosphoric acid	do.	3,000 [e]	2,800	3,077	3,999	4,888 [3]
Pyrophyllite		26,100	25,800	33,400	27,066	5,129 [3]
Salt:[5]						
Marine		16,000	16,000	16,500	20,000	25,000
Rock		215,800	225,000	240,000	503,351 [r]	720,814 [3]
Total		231,800	241,000	256,500	300,000	325,000
Strontium minerals, celestite[e]		2,600	2,600	2,500	2,500	2,500
Sulfuric acid		9,500	9,500	9,500	9,500	9,500
Talc		1,400	900	200	--	5,129 [3]

See footnotes at end of table.

TABLE 1—Continued

MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2007	2008	2009	2010	2011[e]
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural[e]	million cubic meters	61 [3]	50	60	60	60
Petroleum:						
Crude	thousand 42-gallon barrels	1,500 [e]	1,573	1,575	1,575	1,500
Refinery products:						
Liquefied petroleum gas	do.	1,972 [r, 3]	2,000 [r]	2,000 [r]	2,000 [r]	2,000
Gasoline	do.	3,104	3,434	3,400	3,400	3,400
Jet fuel	do.	2,339	2,096	2,100	2,100	2,100
Distillate fuel oil	do.	14,890	13,570	14,000	14,000	14,000
Residual fuel oil	do.	15,112	16,000	16,000	16,000	16,000
Other[e]	do.	1,000	1,000	1,000	1,000	1,000
Total	do.	37,945	38,100	39,000	39,000	39,000

[e]Estimated; estimated data are rounded to no more than three significant digits. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through August 31, 2012.

[2]In addition to the commodities listed, perlite and a variety of crude construction materials are produced, but information is inadequate to make reliable estimates of output.

[3]Reported figure.

[4]Cobalt electrowon from cobalt concentrates and tailings from the Bou-Azzer Mine.

[5]May include production from Western Sahara.

TABLE 2
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2011

(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%, and 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%, and Office National des Hydrocarbures et des Mines (ONHYM), 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 Commerialisation et d'Exploitation Miniere d'Imoulasse (SCEMI)	NA	NA
Do.	Société Commerciale et Miniere du Sahara (SOCOMIS)	Tichka	NA
Do.	Société de Recherches et d'Exploitation Minieres Nadia	Tinitine, Marrakech	NA
Do.	Société Industrie Miniere Marocaine (IMM)	Tichka, Marrakech	NA
Do.	Société Miniere des Barytines d'Asni (SMBA)	NA	NA
Do.	Société Nord Africaine de Recherches et d'Exploitation des Mines d'Argana (SNAREMA)	Seksaoua, Marrakech	120,000
Do.	Société Nouvelle Union des Metaux Maroc (SNUMM)	Jbel Abdellah, Errachidia	12,000
Do.	Société Zenaga	Tinjdad, Errachidia	NA
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, 80%, and Office National des Hydrocarbures et des Mines (ONHYM), 20%]	Aferha	9,200
Do.	Société d'Exploitation des Mines du Rif (SEFERIF) [Office National des Hydrocarbures et des Mines (ONHYM), 100%]	Bou Hoed, near Ouixane	15,000
Do.	Compagnie Marocaine des Barytes (COMABAR) [Norbar Minerals AS, 55%, and Office National des Hydrocarbures et des Mines (ONHYM), 45%]	Azzouzet-Tidiennit	5,000
Do.	North African Industrial Minerals Exploration S.A.R.L. (S&B Group)	Trebia Mine	NA
Celestite	Société Karia Mines	Jbel Kifane, Taounate	NA
Cement, portland	Asment de Temara (Cimentos de Portugal S.A., 57.4%)	Kiln and mill at Temara	845,000
Do.	Société Lafarge Ciments S.A. (Lafarge Maroc, 69.2%)	Douar Laaouameur 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, Tetouan	800,000
Do.	do.	Kiln and mill at Tangier	250,000
Do.	do.	Tetouan II kiln and mill	(1)
Do.	Société Holcim (Maroc) S.A. (Holcim AG of Switzerland, 51%)	Kiln and mill at Oujda	1,000,000
Do.	do.	Settat kiln and mill	1,700,000
Do.	do.	Fes, Ras El Ma kiln and mill	1,200,000
Do.	do.	Fes, Doukkarat clinker mill	600,000
Do.	do.	Nador clinker mill	400,000
Do.	Ciments du Maroc S.A. (CIMAR) (Italcementi Group, 58.3%)	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.	Laayoune clinker mill	350,000
Clay	Société du Ghassoul et de ses Derives SEFRIOUI SA	Tamdafelt	NA
Do.	Antonio Reyes Mines S.A.	Haddou Ammar, Nador	NA
Coal, anthracite	Charbonnages du Maroc [Bureau de Recherches de Participations Minières (BRPM), 98.89%]	Jerada	650,000
Cobalt:			
Ore, gross weight	Compagnie de Tifnout Tighanimine (CTT Managem) S.A. [Societe National d'Investissement, 81.75%]	Bou-Azzer, Ouarzazate	17,000
Metal	do.	Guemassa, Marrakech	1,400

See footnotes at end of table.

TABLE 2—Continued
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2011

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
MOROCCO—Continued			
Copper, concentrate	Société Minière de Bou Gaffer (SOMIFER) [Office National des Hydrocarbures et des Mines (ONHYM), 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%, and Office National des Hydrocarbures et des Mines (ONHYM), 23.08%]	Douar Hajar Mine, Guemassa, Marrakech	18,000
Do.	Société de Développement du Cuivre de l'Anti-Atlas (SODECAT) [Office National des Hydrocarbons et des Mines (ONHYM), 100%]	Tiouit	4,500
Fluorspar, concentrate	Société Anonyme d'Entreprises Minières (SAMINE) (Managem S.A., 58%, and Société Metallurgique d'Imiter, 42%)	El Hammam, Khemisset	120,000
Gold	Akka Gold Mining Co. [Managem S.A., 70%, and Office National des Hydrocarbures et des Mines (ONHYM), 16.07%]	Iourim, Tiznit	3
Iron ore million metric tons	Société d'Exploitation des Mines du Rif (SEFERIF) [Office National des Hydrocarbures et des Mines (ONHYM), 100%]	Bouhoua, Nador	12
Concentrate	Compagnie Minière de Guemassa (CMG) [Managem S.A., 74%, and Bureau de Recherches de Participations Minières (BRPM), 23.08%]	Douar Hajar Mine, Guemassa	29,900
Do.	Compagnie Minière de Touissit (CMT) (Emerging Capital Partners, 50%, and Truffle Capital, 50%)	Touissit, Jerada	73,000
Metal[2]	Société des Fonderies de Plomb de Zellidja (SFPZ) (Zellidja S.A., 50.4%)	Oued El Heimer	70,000
Manganese, concentrate	Société Anonyme Chérifienne d 'Etudes Minières (SACEM) [Bureau de Recherches de Participations Minières (BRPM), 43%, and Compagnie Minière de l'Ogooué SA (COMILOG), 30%]	Imini, Ouarzazate	14,000
Perlite	Perlite Roche [Roche Investments, 70%, and Office National des Hydrocarbures et des Mines (ONHYM), 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%, and general public, 35.3%)	Mohammedia	47,000
Do. 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_2O_5 content	Indio Maroc Phosphore S.A. [Office Chérifien des Phosphates (OCP), 50%, and K.K. Birla Group, 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_2O_5 content	Euro-Maroc Phosphore Co. [Office Chérifien des Phosphates (OCP), 33%; Société Chimique Prayon-Rupe, 33%; Chemische Frabrik Budenheim KG, 33%)	Jorf Lasfar[3]	120,000
Salt:			
Rock	Société de Sel de Mohammedia (SSM) [Office National des Hydrocarbures et des Mines (ONHYM), 100%]	Ain Tekki, Mohammedia	226,500
Marine	Société Chérifienne des Sels (SCS) [Government, 50%, and Société Nouvelle des Salins du Sine Saloum (SNSSS), 50%]	Lac Zima, Safi	30,000

See footnotes at end of table.

TABLE 2—Continued
MOROCCO AND WESTERN SAHARA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2011

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
MOROCCO—Continued			
Silver, ore kilograms	Société Metallurgique d'Imiter (SMI) (Managem S.A., 75.72%, and general public, 24.28%)	Imiter and Igoudrane Mines, Imiter	800
Do. do.	Maya Gold and Silver Inc. [Maya Gold and Silver Inc., 85%, and Office National des Hydrocarbures et des Mines (ONHYM), 15%]	Zgounder Mine, south of Marrakech	NA
Steel products:			
Bars and sections	Société Nationale de Sidérurgie (Sonasid) (General public, 31.14%; Société Nationale d'Ivestissement S.A., 21.07%; Axa Assurances Maroc, 8.53%; Aceralia Redendos, 8.5%)	Jorf Lasfar	300,000
Rebar and wire rod	Univers Acier S.A.	Casablanca	1,000,000
Do.	do.	do.	80,000
Cold-rolled sheet	Maghreb Steel S.A.	do.	250,000
Talc and pyrophyllite:			
Pyrophyllite	Société Industrie Minière Marocaine (IMM)	Khenifra	NA
Talc	Société Zenaga	Tinjdad, Errachidia	NA
Do.	do.	Taliouine, Ouarzazate	NA
Zinc, concentrate	Compagnie Minière de Guemassa (CMG) [Managem S.A., 74%, and Office National des Hydrocarbures et des Mines (ONHYM), 23.08%]	Douar Hajar Mine, Guemassa	170,000
Do.	do.	Draa Sfar	NA
Do.	Société des Mines de Tennous (SOMITE)	Aguerd N'Tazoult, Azilal	NA
Do.	Société Mineral et Substances	Lalla Mimouna, Taza	NA
WESTERN SAHARA			
Phosphate rock	Phosphates de Boucraa S.A. [Office Chérifien des Phosphates (OCP), 65%]	Open pit mine, Boucraa mining center	2,000,000

Do, do. Ditto. NA Not available.
[1]Under construction.
[2]Société des Fonderies de Plomb de Zellidja also refines silver and produces copper matte and sodium antimonate.
[3]A second purified phosphoric acid plant with a capacity of 120,000 metric tons per year was under construction in 2011.