



2006 Minerals Yearbook

MAURITANIA AND NIGER

THE MINERAL INDUSTRIES OF MAURITANIA AND NIGER

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MAURITANIA

Mauritania's mineral sector was dominated by iron ore mining and beneficiation. Other mineral commodities produced in the country included cement, copper, gold, gypsum, petroleum, salt, and steel. The country's identified mineral resources included about 160 million metric tons (Mt) of phosphate rock, 120 Mt of salt, 22.6 Mt of copper ore, 9 Mt of gypsum, more than 1 Mt of sulfur, 400,000 metric tons (t) of peat, and 30 t of gold. Iron ore reserves were estimated to be 185 Mt of hematite ore ranging from 60% to 68% iron and 660 Mt of magnetite ore ranging from 36% to 40% iron. The mining sector was regulated by the Mining Code of 1999, the Investment Code of 2002, and the Petroleum Code of 1988 (Ministère des Mines et de l'Industrie, 2005, p. 14, 27).

Minerals in the National Economy

Mining, which was one of the country's most important sectors to the national economy, contributed about 12% of the gross domestic product (GDP) and represented more than one-half of the country's export earnings in 2005 (Ministère des Mines et de l'Industrie, 2005, p. 7, 27). According to the Ministère des Mines et de l'Industrie (MMI), the development, diversification, and promotion of the mining sector have become the Government's priority in recent years. The number of foreign companies applying for prospecting licenses was increasing, and projects were at various stages ranging from grassroots exploration to mine development.

Production

Gold production decreased by about 47% to 2,615 kilograms (kg) in 2006 from 4,962 kg in 2005, mostly owing to mechanical breakdowns at the Samira Hill Mine mill. Data on mineral production are provided in table 1.

Structure of the Mineral Industry

The MMI was the Government agency responsible for enacting the Mining Code and for the coordination of all activities in the mining sector. The Direction des Mines et de la Géologie was the entity responsible for promoting the mineral sector and for providing geologic and mining information to potential investors; the Direction des Hydrocarbures was in charge of the development of the petroleum sector; and the Office Mauritanien des Recherches Géologiques was the Government entity responsible for evaluating areas of mineral potential for exploration. Société Nationale Industrielle et Minière (SNIM) was responsible for iron ore production and beneficiation. The company operated a mining center at the northern town of Zouerate, three open pit iron ore mines at Guelb El Rhein, Kedia d'Idjill, and M'Haoudat in northern

Mauritania, port facilities at Nouadhi on the Atlantic coast, and a railway that linked the mining center to the port facilities (Ministère des Mines et de l'Industrie, 2005, p. 9-10, 28). Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Copper.—First Quantum Minerals Ltd. of Canada produced its first copper in concentrate from the Guelb Moghrein copper-gold mine in July 2006; commercial production began in October 2006. The Guelb Moghrein Mine is located in the Inchiri region near the town of Akjoujt about 250 kilometers (km) northeast of Nouakchott. The mine was expected to reach its designed capacity of 30,000 metric tons per year (t/yr) of copper concentrate by the first half of 2007. Measured and indicated resources at Guelb Moghrein were reported to be 23.7 Mt. First Quantum held an 80% interest in the mine, and Guelb Moghrein Mines d' Akjoujt S.A. held the remaining 20% (First Quantum Minerals Ltd., 2007a, p. 8; 2007b).

Gold.—First Quantum produced its first gold, which amounted to 322 kg, from the Guelb Moghrein copper-gold mine in July 2006. The designed capacity of the mine was about 2,200 kilograms per year (kg/yr) of gold (reported as 70,000 troy ounces per year) (First Quantum Minerals Ltd., 2007a, p. 8).

Canada-based Rio Narcea Gold Mines Ltd. continued to work on the development of the Tasiast gold mine. Construction work, which was ongoing throughout 2006, was expected to be completed by the first half of 2007, with first production scheduled to begin shortly thereafter. In October, the company announced a revised mineral resource estimate of about 12 Mt at a grade of 2.7 grams per metric ton (g/t) gold compared with a previous resource estimate of about 8.9 Mt at a grade of 3.08 g/t gold. The mine was expected to produce about 3,300 kg/yr (reported as 105,000 troy ounces per year) during a period of 8 years. Projected capital expenditures for Tasiast were \$73 million (Mining Journal, 2006a; Rio Narcea Gold Mines Ltd., 2006a, b).

Iron Ore.—A three-stage bankable feasibility study for the development of the Guelb el Aouj iron ore project was underway during the year. Perth-based Sphere Investments Ltd. of Australia (SIL) was to fund the first \$11 million to earn a 50% interest in the project, which consisted of a 17-million-metric-ton-per-year (Mt/yr) iron ore open pit mine, and a 7-Mt/yr beneficiation and direct-reduced-iron (DRI) pelletizing plant. A resource definition drilling campaign for the project, which was completed in 2006, outlined a new resource estimate yielding measured, indicated, and inferred resources of high-quality magnetite-quartzite of about 701 Mt compared with the 450 Mt previously reported by the company. SIL expected to complete the bankable feasibility study by the second quarter of 2007, to begin construction work by 2008, and to produce the

first DRI pellets by the second half of 2010. The life of the mine was projected to be 30 years (Mining Journal, 2006b; Sphere Investments Ltd., 2007, p. 2-6).

During the second quarter of 2006, Saudi Basic Industries Corp. through its wholly owned subsidiary Saudi Iron and Steel Company (Hadeed), and Qatar Steel Company (QASCO) invested about \$22 million in SIL as part of a new strategic iron ore partnership under which Hadeed and QASCO were to secure a source of high-grade DRI pellets as feed for their respective steel plants. In addition to working on the Guelb el Aouj project, SIL completed a reconnaissance diamond-drilling program for the Tintekrate Bou Derga deposits, which are located in the southern part of the area that makes up Guelb el Aouj. The envisioned mine will make use of SNIM's existing iron ore railway and port infrastructure (Mining Journal, 2006b; Sphere Investments Ltd., 2007, p. 2-6).

Mineral Fuels and Related Materials

Petroleum.—Mauritania began producing its first petroleum from the Chinguetti oilfield in February 2006. The Chinguetti oilfield was owned by a consortium of companies that included BG Group plc, Hardman Resources Ltd., Premier Oil plc, Roc Oil Ltd., Government-owned Société Mauritanienne de Hydrocarbures, and Woodside Petroleum Ltd. Petroleum production from the Chinguetti field was expected to average 75,000 barrels per day (bbl/d). The first 1 million barrels produced were shipped to International United Petroleum & Chemicals Co. Ltd. of China, which was the trading arm of China Petroleum and Chemical Corp. Petroleum reserves at Chinguetti were estimated to be 120 million barrels (North Africa Journal, The, 2006; Woodside Petroleum Ltd., 2006). Companies exploring for petroleum in the country during 2006 included Baraka Petroleum Ltd. of Australia in joint venture with CNPC International Ltd. of China, which planned to drill the Heron-1 well, and Dana Petroleum plc of the United Kingdom, which on December 5 announced the discovery of petroleum at its offshore Aigrette-1 exploration well in Block 7 (Dana Petroleum plc, 2006; Rigzone.com, 2006).

Uranium.—At least two companies were exploring for uranium during the year. Perth-based Murchison United NL was granted five uranium exploration licenses covering an area of 6,766 square kilometers (km²) in Bin En Nar and in Bir Moghrein and was awaiting approval of three other uranium exploration licenses by the Government. The company conducted ground reconnaissance work to perform detailed radiometric studies on five anomalies. The results of these studies were yet to be analyzed as of yearend (Murchison United NL, 2006).

On November 8, 2006, Alba Mineral Resources plc (Alba) of the United Kingdom acquired a 50% interest in Mauritania Ventures Limited (MVL). MVL held two uranium exploration licenses in northern Mauritania. Alba applied for a third exploration license in the northern part of the country and for gold and base-metal exploration licenses covering an area of about 6,000 km² located near the uranium exploration properties. Alba also applied for an additional five copper-gold-iron oxide permits in the southern part of the country (Alba Mineral Resources plc, 2006).

Outlook

The recent coming online of the Chinguetti petroleum field in addition to ongoing petroleum exploration and the discovery of petroleum at the Aigrette-1 well suggest that the petroleum sector is likely to become a significant contributor to the national economy. This sector is likely to drive the growth of the mineral sector in the near future. Petroleum exports, which are projected to total about 18.6 million barrels per year, will reportedly generate revenues of up to \$1 billion, of which the Government is expected to earn an estimated 22.5%. The expected positive prospects have already reportedly led the Government to double the wages of state employees and allowed the resumption of social and economic projects in the country that had been frozen for years owing to the lack of resources and political instability (North Africa Journal, The, 2006).

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NIGER

Mineral commodities produced in Niger included cement, coal, gold, gypsum, limestone, salt, silver, tin, and uranium. In 2006, Niger was the world's fourth ranked producer of uranium (Uranium Information Centre Ltd., 2007).

A new Mining Code was adopted in August 2006. Under the new Mining Code, the National Mine Research Office, whose responsibilities included organizing mining exploration programs, was replaced by two newly established entities: the Geological and Mining Research Center and Société du Patrimoine des Mines du Niger (SOPAMIN). SOPAMIN is to hold the state's shares in the existing uranium companies and

is in charge of engaging in commercial transactions, such as uranium sales. Since the adoption of the new Mining Code, the Government has issued a significant number of new mineral exploration permits. Niger joined the Extractive Industry Energy Initiative (EITI) in 2005 and, as part of the EITI efforts, appointed in late 2006 a national consultative committee, which included representatives of the general public. A first audit report reconciling revenue paid by mining companies with Government receipts was scheduled to be issued in late 2007 (International Monetary Fund, 2007b, p. 5; 2007c, p. 9).

Minerals in the National Economy

Niger's mineral sector accounted for about 3% of the GDP and for about 40% of exports. According to the International Monetary Fund (IMF), a renewed interest in the generation of nuclear energy had led to increased demand for uranium, encouraged investment expansions at existing uranium mines, and promoted exploration. Foreign direct investment in the sector from 2008 to 2012 was projected to be \$1.4 billion, which would double the country's uranium production capacity (International Monetary Fund, 2007a, p. 9).

Production

Data on mineral production are provided in table 1.

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Commodity Review

Mineral Fuels and Related Materials

Petroleum.—Niger did not produce petroleum and depended upon imports to meet its domestic requirements. In October 2006, TG World Energy Corp. of Canada spudded the Saha-1 well, which was the first well in a three-well drilling program that the company planned to carry out through 2007. The well flowed uneconomic quantities of petroleum and was abandoned as noncommercial. The company's next target, the Fachi West-1 exploration well, was to be drilled by May 2007. TG World's future plans included the drilling of a third exploration well at a location that was to be determined after the results of Fachi West-1 were known, and the acquisition of an additional 700 km of two-dimensional (2-D) seismic data for regional and prospect-specific coverage in the Ténéré Block (TG World Energy Corp., 2007, p. 1, 5).

Uranium.—In addition to Paris-based Areva NC, which was the country's sole uranium producer, at least three companies were exploring for uranium in Niger in 2006. These companies included Bayswater Uranium Corp., a group of companies led by China National Uranium Corp., and North Atlantic Resources Ltd.

Production of uranium, which increased by about 11% in 2006, came from the Akouta underground mine, which was operated by Compagnie Minière d' Akouta (COMINAK), and

the Arlit open pit mine, which was operated by Société des Mines de l' Air (SOMAIR). COMINAK was owned by Areva NC (34%), the Government of Niger (31%), Overseas Uranium Resources Development Company of Japan (25%), and ENUSA Industrias Avanzadas, S.A. of Spain (10%) and employed about 1,100 people. SOMAIR was owned by Areva NC (63.4%) and the Government of Niger (36.6%) and employed about 600 people. An action plan was being implemented at COMINAK to optimize production while the company prepared to mine the new Afasto ore body at the end of 2007. In 2006, the company was granted exploration permits for the Agebout and the Afouday areas and worked on the characterization of the Imouraren ore body to determine its commercial feasibility. Areva NC submitted 19 new permit applications in 2006 in accordance with the recently amended Nigerien mining law. The Imouraren permit, which was located about 80 km south of Arlit, was granted in July 2006. The permit included an ore body discovered in 1969 that Areva NC planned to mine owing to favorable market conditions. One hundred people were employed at the site in 2006. More than 55 km of development drilling had been completed at the site during a period of 1 year and more than 2 t of ore had been shipped for testing to Areva NC's laboratories (Areva NV, 2006, p. 62-71).

Bayswater Uranium Corp. applied for 16 uranium concessions covering 8,000 km² in two blocks in Niger. According to the company, the granting of the exploration concessions was delayed while the Government reviewed the country's Mining Code; the review was completed on November 1, 2006. Bayswater was required to reapply for the concessions. The company expected to receive Government approval and planned then to conduct airborne radiometric and magnetic surveys and followup prospecting of anomalous targets to define uranium targets of interest for subsequent drilling (Bayswater Uranium Corp., 2007, p. 7).

A group of companies led by China National Uranium Corp. was granted uranium exploration licenses covering the areas of Madaouela and Teguidda in the Agadez region, which is located about 1,000 km northeast of Niamey (Creamer Media's Mining Weekly, 2006; Mining Journal, 2006).

North Atlantic Resources Ltd. was granted a uranium exploration license for the 1,963-km² Abelajouad property, which is located in the Arlit region about 800 km from Niamey. Under the terms of the agreement with the Government, the company was to invest about \$2.2 million during a period of 3 years to maintain its interest in the property. If the project were to advance to commercial production, the Government would retain a 10% carried interest and up to a 20% participating interest in the project (North Atlantic Resources Ltd., 2007, p. 3).

Outlook

The IMF estimates that real GDP growth in Niger is likely to reach 4.5% in 2007 owing, in part, to the development of the gold and uranium sectors. The adoption of a new Mining Code under which the Government is to participate in new mining development initiatives with the private sector and renewed international interest in the generation of nuclear energy, suggest

that Niger is likely to benefit from an increase in foreign direct investment in the mineral sector in the near future.

More-extensive coverage of the mineral industry of Niger can be found in the 2003, 2004, and 2005 U.S. Geological Survey Minerals Yearbook, volume III, Area Reports—International—Africa and the Middle East, which are available on the World Wide Web at URL <http://minerals.usgs.gov/minerals/pubs/country>.

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TABLE 1
 MAURITANIA AND NIGER: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Country and commodity	2002	2003	2004	2005	2006
MAURITANIA²					
Cement	200,000 ^e	200,000 ^e	300,000	300,000 ^e	373,963
Copper in concentrate	--	--	--	--	5,031
Gold	--	--	--	--	322
Gypsum	100,000 ^e	34,264	38,940	43,266 ^f	45,222
Iron ore:					
Gross weight	9,553 ³	10,377 ⁴	10,674 ^{f,4}	10,752 ^f	11,155
Iron content ^e	6,200	6,890	6,900 ^f	7,000 ^f	7,250
Petroleum, crude	--	--	--	--	11,170
Salt	5,500 ^e	15	20	20 ^e	20
Steel, crude	5,000	5,000 ^e	5,000 ^e	1,263 ^f	1,065
NIGER⁶					
Cement, hydraulic ^e	53,700 ⁵	53,700	53,700	53,700	53,700
Coal, bituminous	182,916	183,000 ^e	183,000 ^e	182,060 ^f	176,320
Gold	28 ⁷	30 ^{e,7}	684 ⁷	4,962 ^f	2,615
Gypsum	17,652	17,700 ^e	17,700 ^e	17,417 ^f	13,043
Limestone	146,399	146,000	146,000	146,000	146,000
Salt ^e	2,000	2,000	2,000	1,269 ^{f,5}	1,300
Silver	NA	NA	NA	201 ^{f,5}	200
Sulfuric acid:					
Gross weight	62,000	67,000	70,000	70,000 ^e	70,000 ^e
Sulfur content ^e	20,000 ³	22,000	23,000	23,000	23,000
Tin, mine output, Sn content	11	11 ^e	3,100 ^e	14 ^{f,3}	13
Uranium, U content	3,076	3,143 ³	3,282	3,093	3,434

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^fRevised. -- Zero.

¹Table includes data available through November 1, 2007.

²In addition to the commodities listed, modest quantities of crude construction materials (clays, sand and gravel, and stone) presumably were produced, but output was not reported quantitatively. The minimill of Société Arabe de Fer et d'Acier en Mauritanie produced rebar and wire, but available information is inadequate to make reliable estimates of output.

³Reported by National Industrial and Mining Company.

⁴Reported by Ministère des Mines et de l'Industrie.

⁵Reported figure.

⁶In addition to the commodities listed, phosphate rock, tungsten ore, and a variety of construction materials (clays, sand and gravel, and stone) were produced but information is inadequate to make reliable estimates of output.

⁷Does not include production from artisanal miners.

TABLE 2
MAURITANIA AND NIGER: STRUCTURE OF THE MINERAL INDUSTRIES IN 2006

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies	Location of main facilities	Annual capacity
MAURITANIA			
Cement	Ciment de Mauritanie (Private Mauritanian investors, 90%, and Compañía Valenciana de Cementos Portland, 10%)	Nouakchott	545,000 cement and clinker.
Do.	Mauritano-Francaise des Ciments S.A.	do.	NA.
Copper	First Quantum Minerals Ltd., 80%, and Guelb Moghrein Mines d'Akjoujt S.A., 20%	Guelb Moghrein copper-gold mine	30,000 concentrate.
Gold	kilograms do.	do.	2,200.
Gypsum	Société Arabe des Industries Metallurgiques Mauritano-Koweitiennes (SAMIA)	Sebkha N'dramcha between Nouakchott and Akjoujt	NA.
Iron ore	Société Nationale Industrielle et Minière (SNIM) (Government, 78%, and Arab financial and mining investors, 22%)	Guelb El Rhein, Kedia d'Idjill, and M'Haoudat Mines	12,000,000 ore.
Do.	Sphere Investments Ltd., 50%, and Société Nationale Industrielle et Minière (SNIM), 50%	Guelb el Aouj Mine ¹	17,000,000 ore; 7,000,000 direct-reduced iron
Salt	Société Mauritanienne des Industries du Sel (SOMISEL)	N'terert and d'Idjill brine pits	NA.
NIGER			
Coal	Société Nigérienne de Charbon (SONICHAR)	Anou Araren, central Agadez region	300,000.
Gold	kilograms Société des Mines du Liptako S.A. (SML) [African GeoMin Mining Development Corporation Ltd. (which is owned by Etruscan Resources Inc., 50%, and Semafo Inc., 50%), 80%, and Government, 20%]	Samira Hill Mine, 90 kilometers west of Niamey	3,000
Uranium	Compagnie Minière d'Akouta (COMINAK) [Areva NC, 34%; Government, 31%; Overseas Uranium Resources Development Co., 25%; ENUSA Industrias Avanzadas S.A., 10%]	Akouta underground mine, northern Niger	2,500.
Do.	Société des Mines de l'Air (SOMAIR) (Areva NC, 63.4%, and Government, 36.6%)	Arlit open pit mine, northern Niger	2,300.

NA Not Available.

¹Under development. First production expected during the second half of 2010.