



2010 Minerals Yearbook

MAURITANIA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF MAURITANIA

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The Islamic Republic of Mauritania is located in northwestern Africa. The country occupies an area of more than 1 million square kilometers (km²) and has a population of 3.3 million in 2010. Mauritania includes four major geologic units—The Reguibat shield in the north, which includes the Archean rocks and the Paleoproterozoic Birimian succession and hosts major iron ore and gold deposits; the Mauritanides belt in the south-central region, which trends northwest to southeast along the West African craton; the coastal basin, which has Paleozoic to Cenozoic sedimentary formations; and the Taoudeni basin in the east-central region, which is one of the largest Proterozoic to Paleozoic sedimentary formations in Africa (Ministry of Industry and Mines, 2008; Office National de la Statistique, 2011).

The interest in the mineral resources of Mauritania had been increasing in recent years owing to the development of the country's mining laws, the improved investment climate, and the dissemination of geologic and metallogenic maps at 1:1,200,000 and 1:1,000,000 scales. In November, the Government held the first Mauritanian Mining Conference and Exhibition under the name Mauritanides 2010 in Nouakchott. Mauritanides 2010 was attended by 513 delegates and 52 companies from 26 countries (AME Trade Ltd., 2011).

In 2010, Mauritania was the second ranked producer of iron ore in Africa after South Africa and the world's 15th ranked producer in terms of the volume of its iron ore production (Jorgenson, 2011). In addition to iron ore production, which has been the country's major mineral industry since the late 1950s, Mauritania produced cement, copper, crude oil, gold, gypsum, quartz, salt, and steel.

Minerals in the National Economy

Mauritania's real gross domestic product, at 1998 prices, increased by 5.2% in 2010 compared with a decrease of 1.2% in 2009. The value of Mauritania's total exports of goods increased by 52% in 2010 to \$2,074 million from \$1,364 million in 2009. The value of iron ore exports, which accounted for 48% of the country's total exports, increased by about 91% to \$997 million from \$522 million in 2009. The increase was attributable to higher iron ore prices, which averaged \$153.4 per metric ton in 2010 compared with \$108 per metric ton in 2009, and to a higher volume of iron ore exports. The value of copper and gold exports, which accounted for 24% of total exports, increased by about 41% to \$497 million from \$353 million in 2009; crude oil exports (14% of total exports) increased by 36% to \$297 million from about \$218 million in 2008. The destinations of Mauritania's iron ore exports included China (42%), France (19%), Italy (14%), Germany (12%), Belgium (5%), Spain (3%), and others (5%) (Banque Centrale de Mauritanie, 2011, p. 37, 43; International Monetary Fund, 2011, p. 23).

Government Policies and Programs

The Ministère de l'Industrie et des Mines [Ministry of Industry and Mines] and the Ministère du Pétrole et de l'Énergie [Ministry of Petroleum and Energy] are the Government agencies responsible for regulating mineral industry activity. The Direction des Mines et de la Géologie [Department of Mines and Geology] implements the Government policies to enhance foreign investment in the mining sector of Mauritania. The mining laws exempt mining companies from customs duties for exploration during the first 5 years of production and permanently on fuel and spare parts. The tax code includes a 25% corporate income tax rate after a tax exemption for the first 3 years of production; a tax withholding rate of 14% on repatriated earnings; a 16% value-added tax; and royalties that range from 1.5% to 5% depending on the value of the product. L'Unité du Cadastre Minier (the Mining Cadastre Unit) manages the exploration licensing and mining rights issuance process by offering four classes of titles: reconnaissance licenses, 3-year exploration permits, small-scale mining permits, and 30-year mining licenses (Ministry of Industry and Mines, 2008, p. 10–11).

In 2009, the mining laws were modified to give the Government the right to a 10% free-carried interest in any company that is awarded a new mining license. Only a Mauritania registered company can hold a mining license. The Government also has the option to acquire an additional 10% paid interest in the operating company, although the law is vague on how this option is to be implemented (Sphere Minerals Ltd., 2010).

Production

In 2010, the volume of iron ore production increased by 12% compared with that of 2009. Crude oil production decreased by 27% compared with that of 2009, and copper production was unchanged from its 2009 level (table 1).

Structure of the Mineral Industry

Société Nationale Industrielle et Minière (SNIM) was a majority state-owned mining company (78.35% interest) that contributed, on average, 40% of the country's total exports, 20% of the Government's revenue, and 10% of the GDP. SNIM operated iron ore mines at Guelb el Aouj, Guelb el Rhein, M'Haoudat, and Zouerate in northern Mauritania. SNIM also owned and operated a 700-kilometer (km) heavy haul railway and a shipping terminal at Nouadhibou Port on the Atlantic coast. Tasiast Mauritanie Ltd. S.A. (a wholly owned subsidiary of Kinross Gold Corp. of Canada) and Mauritanian Copper Mines S.A. (a wholly owned subsidiary of First Quantum Minerals Ltd. of Australia) were the only two companies that produced gold in

Mauritania in 2010. Mauritanian Copper Mines also produced copper. Petroliaam Nasional Berhad (Petronas) was the country's only producer of crude oil from the Changuetti offshore field. Other mineral production companies included Ciment de Mauritanie S.A. and Mauritano-Française des Ciments S.A., which produced cement, and Société Mauritanienne des Industries du Sel (SOMISEL), which produced salt (table 2).

During 2010, changes in ownership of three significant acquisitions of international companies with major mining activities in Mauritania took place. These changes were expected to affect the future of mineral production in Mauritania. In July, Gryphon Minerals Ltd. of Australia launched a takeover bid for Shield Mining Ltd. of Australia, which had been prospecting for copper and gold in Mauritania. In August, Xstrata plc of Switzerland acquired a 75% interest in Sphere Minerals Ltd. of Australia, which had been developing iron ore resources in Mauritania for more than 10 years. Sphere, in partnership with SNIM (50% each) had established El Aouj Mining Co. S.A. to develop the Guelb el Aouj iron ore deposit. Sphere was also the 100% owner of the Askaf and the Lebtheinia permits and had been developing the iron ore resources of both projects. In September, Kinross completed its acquisition of Red Back Mining Inc.'s holdings in Mauritania for \$7.1 billion and became the sole owner of the Tasiast gold mine. Kinross planned to expand exploration for gold deposits in the Tasiast permit area and had committed \$10 million to help the Government build a mining school that would graduate skilled mining professionals to staff the country's growing mining sector (Avery, 2010; Mineweb, 2010; Kinross Gold Corp., 2011b; Xstrata plc, 2011a, b).

Commodity Review

Metals

Copper.—Copper was produced at the Guelb Moghrein Mine, which was an open pit mine located near Akjoujt (about 250 km northeast of Nouakchott) that was owned and operated by Mauritanian Copper Mines. The mine produced about 37,000 metric tons (t) of copper in concentrate in 2010, which was nearly unchanged from the 2009 production level. The mine employed 1,216 people in 2010 compared with 1,051 people in 2009. As of yearend 2010, the mine had a remaining life of about 6.5 years. Mauritanian Copper Mines produced 2 million metric tons per year (Mt/yr) of concentrate at a grade of 22.5% copper. As of yearend 2010, First Quantum estimated the total mineral reserves at the Guelb Moghrein Mine to be about 26.4 million metric tons (Mt) of ore with a cutoff grade of 1.26% copper and 0.87 gram per metric ton (g/t) gold (First Quantum Minerals Ltd., 2011).

Gold.—Following the takeover of Red Back Mining's assets, Kinross's holdings in Mauritania comprised three permits that covered 16,222 km² in northwestern Mauritania, including the Ahmeyim-Tijirit, the Karet, and the Tasiast permits. In 2010, the Tasiast gold mine produced 5,765 kilograms (kg) of gold compared with 5,138 kg of gold in 2009. Estimates of proven and probable mineral reserves at the Tasiast deposit were about 129 Mt at a grade of 1.82 g/t gold (about 7.6 million troy

ounces). The measured and indicated resources were estimated to be 237.3 Mt at a grade of 1.19 g/t (9.0 million troy ounces) gold, and the inferred resources were estimated to be about 219 Mt at a grade of 0.65 g/t (about 4.6 million troy ounces) gold. Kinross planned to implement an intensive \$55 million exploration drilling program at the Tasiast area in 2011 that would include additional infill drilling; to conduct the drilling, the company would increase the number of drill rigs to 25 (Kinross Gold Corp., 2011a).

In 2010, Mauritanian Copper Mines produced 2,535 kg of gold at the Guelb Moghrein copper-gold mine compared with 2,894 kg of gold in 2009. As of yearend 2010, updated mineral reserves at the Guelb Moghrein deposit were about 10.0 Mt of proved ore reserves grading 1.02 g/t gold and 16.3 Mt of probable ore reserves grading 0.77 g/t gold (First Quantum Minerals Ltd., 2011).

Gryphon conducted a followup study at Tijirit and an aerial gravity survey of the Akjoujt copper-gold license area (EL448), which was 100% owned by the company and located 33 km southwest of the Guelb Moghrein copper-gold mine. Gryphon undertook preliminary diamond drilling and planned to conduct a 30,000-meter (m) reverse-circulation drill program at the Tijirit project in 2011; the company then planned to begin drilling at the Akjoujt copper-gold permit area, which is located near the Guelb Mogherin gold-copper mine, in 2012 (Shield Mining Ltd., 2010a, p. 3; 2010b, p. 1–2; Gryphon Minerals Ltd., 2011).

Iron Ore.—SNIM, which produced 11.5 Mt of iron ore in 2010, was responsible for the country's entire iron ore production. The company had set a target of 12 Mt/yr of iron ore exports for 2011 that would be increased to 20 Mt/yr by 2014. To achieve its goals, SNIM borrowed \$710 million in loans from international financial institutions, including a \$175 million loan from the African Development Bank, to achieve its goal of increasing its production capacity at the Guelb 2 Mine by 4 Mt/yr and at the T4 and the T5 Mines by 2 Mt/yr. The loans would cover the cost of expanding the existing Guleb el Rhein Mine, Kedia d'Idjill Mine, and M'Haoudat Mine and constructing a new beneficiation plant at the Guelb el Rhein Mine that would produce 4 Mt/yr of concentrated iron ore. The loans would also pay for a new ore-carrier port next to the existing port at Nouadhibou to enable handling of 170,000-t-capacity ships in the first phase and 250,000-t-capacity ships in the second phase, as well as for upgrading the 700-km iron ore railway between the mines and the port (Arab Steel, 2010a, b; Australia's Paydirt, 2011).

Xstrata announced plans to invest \$6 billion to develop iron ore production in Mauritania and to produce at least 50 Mt/yr of iron ore from its three projects in Mauritania at the Askaf, the Guelb el Aouj, and the Lebtheinia permits. Xstrata's development plans included long-term production of 7 Mt/yr of iron ore at the Guelb el Aouj Mine, which could be increased to 30 Mt/yr but required an investment of \$1.6 billion. The company also had a near-term plan to produce 5 Mt/yr of iron ore from the Askaf deposit in 2013, which would require an investment of \$600 million, and a long-term plan to produce another 30 Mt/yr of iron ore from the Lebtheinia deposit (Australia's Paydirt, 2011).

Industrial Minerals

Gypsum.—Société Arabe des Industries Métallurgiques (SAMIA) was a 50-50 joint venture of Industrial Bank of Kuwait and SNIM. SAMIA produced gypsum at its 100,000-metric-ton-per-year (t/yr)-capacity mine, which is located about 50 km north of Nouakchott (Société Arabe des Industries Métallurgiques, 2011).

Quartz.—Mauritania Minerals Co. (MMC) started production of quartz at the Oum Agueineina Mine, which is located about 150 km from Nouadhibou Port. The quartz mine was owned by MMC (90%) and the Government (10%) and had the capacity to produce 300,000 t/yr. MMC, which was awarded a license for the establishment of the first quartz operation in Mauritania, planned to employ 300 people (Feytis, 2010)

Mineral Fuels and Related Materials

Uranium.—In 2010, several companies were active in exploring and prospecting for uranium in Mauritania. These companies included Agrineq S.A., Aura Energy Ltd., and Forte Energy NL (all of Australia), Alba Mineral Resources plc and Alecto Minerals Plc (both of the United Kingdom), Earthstone Resources Ltd. of Indonesia, Lusitania Uranium Mauritania, Mauritania Resources Ltd., and Orecorp Mauritania SARL.

Forte Energy, which held seven uranium exploration licenses that covered 8,103 km² in the Zedens region in northern Mauritania, conducted vehicle-based radiometric surveys and very-low-frequency electromagnetic surveys at the Bir En Nar prospect and at several anomalies identified near Bir Moghrein. In February, the company renewed a 5,400-m diamond-drilling program at the Bir En Nar permit after completing a 4,000-m reverse-circulation drilling program. In July, the company reported the indicated and inferred mineral resource estimates for the Bir En Nar prospect to be 1.33 Mt containing 704 parts per million of uranium oxide (U₃O₈). Forte Energy began another reverse-circulation drilling program, focusing on Anomaly 238 (A238), which is located 55 km southeast of Bir Moghrein, and the Tamreikat prospect, which is located 40 km north of A238 (Forte Energy N.L., 2009, 2011; Australia's Paydirt, 2010).

Aura Energy Ltd. of Australia explored for uranium at two locations in Mauritania—the Reguibat craton, which covers an area of about 8,400 km² in northern Mauritania, and the Fai, which is located in the Mauritanide fold belt in central Mauritania and covers a 2,900-km² area. Aura Energy wholly owned eight uranium exploration permits and had a 70% interest in two other permits in Mauritania in joint venture with Ghazal Minerals. The company was joint-venture partner with GCM Resources of the United Kingdom in the Fai uranium prospect. Aura completed a drilling program between November 2010 and February 2011. The program including drilling 2,022 holes into the Reguibat project in 2011, in addition to the 392 holes completed in January 2010. Drilling results confirmed the presence of widespread calcrete uranium mineralization. Alecto Minerals held two uranium licenses at the 888-km² Mreiti site and the 704-km² Wad Mourkba site, which were located in the Archean shield near the northern border with the Taoudeni

sedimentary basin (Alecto Minerals Plc, 2011; Aura Energy Ltd., 2010).

Outlook

The mineral industry of Mauritania is expected to grow significantly in the near future with the entry of major mining companies, such as Gryphon, Kinross, and Xstrata, into the country's mining sector in 2010. The International Monetary Fund projected a 50% increase in the value of iron ore exports to \$1.5 billion in 2011 from about \$1 billion in 2010. Mauritania's gold production is expected to increase in the next 5 years because of Kinross' acceleration of exploration activity at the Tasiast deposit. The company expected to increase output at the Tasiast Mine to 1.5 million troy ounces (46,650 kg) of gold equivalent from the current (2010) level of 5,765 kg of gold by 2015. Copper and gold production are expected to increase from the Akjoujt, the Sabussiri, and the Tirijit exploration projects following the acquisition of Shield Minerals by Gryphon. The country's capacity to export iron ore is expected to increase significantly when the construction of a second loading wharf at the Port of Nouadhibou on the Atlantic coast is completed in 2012 (International Monetary Fund, 2011, p. 23; Kinross Gold Corp., 2011a).

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TABLE 1
MAURITANIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2006	2007	2008	2009	2010
METALS					
Copper in concentrate	5,031	31,956	33,073	37,000	37,000 ³
Gold kilograms	322	2,251	6,254	8,030 ³	8,300 ³
Iron ore:					
Gross weight thousand metric tons	10,658	11,817	10,950	10,275	11,500
Iron content ^c do.	6,930	7,680	7,120	6,680	7,480
Steel, crude ^c	5,000	5,000	5,000	5,000	5,000
INDUSTRIAL MINERALS					
Cement	273,963	409,513	322,419	339,977	340,000 ^e
Gypsum	45,222	49,229	44,428	36,928	70,694 ^e
Salt	310	420	570	455	450 ^e
MINERAL FUELS AND RELATED MATERIALS					
Petroleum, crude thousand 42-gallon barrels	11,168	5,517	4,422	4,104	3,005 ³

^cEstimated; estimated data are rounded to no more than three significant digits. ^fRevised. do. Ditto.

¹Table includes data available through October 31, 2011.

²In addition to the commodities listed, modest quantities of crude construction materials (clays, sand and gravel, and stone), phosphate rock, and quartz presumably were produced, but output was not reported quantitatively, and available information was inadequate to make reliable estimates of output.

³Reported.

TABLE 2
MAURITANIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Ciment de Mauritanie (Private Mauritanian investors, 90%, and Compañía Valenciana de Cementos, 10%)	Nouakchott	900
Do.		Mauritano-Française des Ciments S.A.	do.	450
Copper		Mauritanian Copper Mines (First Quantum Minerals Ltd., 100%)	Guelb Moghrein Mine, 250 kilometers northeast of Nouakchott	37
Gold	kilograms	do.	do.	2,900
Do.	do.	Tasiast Mauritanie Ltd. S.A. (Kinross Gold Corp., 100%)	Tasiast, 300 kilometers north of Nouakchott	7,300
Gypsum		Société Arabe des Industries Métallurgiques (SAMIA) [Industrial Bank of Kuwait, 50%, and Société Nationale Industrielle et Minière (SNIM), 50%]	Sebkha N'dramcha, Nouakchott	100
Iron ore		Société Nationale Industrielle et Minière (SNIM) (Government, 78.35%; Industrial Bank of Kuwait K.S.C, 7.17%; Arab Mining Co., 5.66%; Iraq Foreign Development Fund, 4.59%; Office National des Hydrocarbures et des Mines, 2.30%; Islamic Development Bank, 1.79%; private investors, 0.14%)	Guelb el Rhein, Kedia d'Idjill, and M'Haoudat Mines, Tris Zemmour	12,000
Do.		El Aouj Mining Co. S.A. [Société Nationale Industrielle et Minière (SNIM), 50%, and Xstrata plc, 50%]	Guelb el Aouj Mine, ¹ Zouerate	7,000
Petroleum, crude	thousand 42-gallon barrels	Petroliam Nasional Berhad (Petronas)	Chinguetti oilfield, 80 kilometers offshore	5,000
Quartz		JV of Mauritania Minerals Co. (90%) and Government (10%)	Oum Agueineina	300
Salt	metric tons	Société Mauritanienne des Industries du Sel (SOMISEL)	Sabkha de N'terert and d'Idjill brine pits, in the southwestern part of the country	500

Do, do. Ditto

¹Under development.