



# 2009 Minerals Yearbook

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**THE GAMBIA, GUINEA-BISSAU, AND SENEGAL**

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# THE MINERAL INDUSTRIES OF THE GAMBIA, GUINEA-BISSAU, AND SENEGAL

By Omayra Bermúdez-Lugo

## THE GAMBIA

Mining in The Gambia was limited to the production of clay, ilmenite, laterite, silica sand, and zircon, and did not play a significant role in the country's economy. The Department of State for Trade, Industry, and Employment was the Government entity responsible for the administration of the mining sector. The Gambia did not produce petroleum and depended upon imports to meet its domestic energy requirements.

### Production

Data on mineral production are in table 1.

### Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

### Commodity Review

#### *Metals*

**Titanium, Titanium Dioxide, and Zircon.**—Carnegie Minerals (Gambia) Ltd. continued to wait for arbitration on its legal claim over the mining rights for the Batukunku, the Kartung, and the Sanyang mineral sands deposits in Brufut. The Government had expropriated Carnegie's mining rights to these deposits in January 2008, allegedly claiming that the company was exporting minerals other than those outlined within its mining contract. Carnegie denied the allegations. The company was a joint venture of Australian companies Astron Ltd. and Carnegie Corp. Ltd. (Astron Ltd., 2010, p. 71-72).

### Reference Cited

Astron Ltd., 2010, 2009 annual report: Sydney, Australia, Astron Ltd., 108 p.

## GUINEA-BISSAU

Mining in Guinea-Bissau did not play a significant role in the country's economy. Mineral production was limited to small-scale production of construction materials, such as clay, granite, limestone, and sand and gravel, but information was inadequate to make reliable estimates of output. The country's prospective mineral resources included bauxite, diamond, gold, heavy minerals, petroleum, and phosphate rock. Guinea-Bissau did not produce petroleum and depended upon imports to meet its domestic energy requirements.

## SENEGAL

Senegal was among the world's leading producers of phosphate rock. The country accounted for about 6% of global fuller's earth production in 2009. Other mineral commodities produced in the country were basalt, cement, clays, gold, laterite, lime, limestone, natural gas, petroleum, salt, and sand.

### Production

Gold production increased to 5,354 kg from an estimated 600 kg in 2008 owing to the opening of the Sabodala Mine. Crude petroleum production increased by 152% to 249,000 barrels (bbl) from 99,000 bbl in 2008. Calcium phosphate rock production increased by 47% to 948,000 metric tons (t) from 645,000 t, and phosphoric acid production increased by 57% to 283,000 t from 180,000 t. Data on mineral production are in table 1.

### Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

### Commodity Review

#### *Metals*

**Gold.**—Most gold mining activities in Senegal were concentrated around the Sabodala gold district, which is located in northeastern Senegal. Sabodala Gold Operations S.A. produced its first gold from the Sabodala gold mine in March. The mine, which is located 650 kilometers (km) east of Dakar and 96 km north of the town of Kedougou, produced a total of 5,354 kilograms (reported as 172,140 troy ounces). Sabodala Gold was owned by Mineral Deposits Ltd. of Australia (90%) and the Government (10%) (Mineral Deposits Ltd., 2009; 2010, p. 11-12).

IAMGOLD Corp. and Oromin Explorations Ltd. of Canada and Randgold Resources Ltd. of the United Kingdom continued to explore for gold during the year. IAMGOLD completed a 5,187-meter (m) diamond drilling program and a 5,000-m reverse-circulation drilling program at its wholly owned Boto project, which is located in eastern Senegal. The company planned to conduct a detailed geologic study of Boto in early 2010 using high-resolution ground and airborne geophysical data to determine mineralization and future drilling targets (IAMGOLD Corp., 2010, p. 70).

In September, SRK Consulting Inc. of Canada completed a preliminary feasibility study for Oromin's Sabodala gold project (SGP), which was being developed by Oromin. The SGP included the Goulouma West, the Goulouma South,

the Kerekounda, and the Masato deposits. Total indicated resources for the Goulouma West, the Goulouma South, and the Kerekounda deposits were estimated to be 9.1 million metric tons (Mt) at an average grade of 3.34 grams per metric ton (g/t) gold; resources for the Masato deposit were estimated to be 32.8 Mt at an average grade of 1.2 g/t gold. The SGP was located in the Tambacounda region in southeastern Senegal about 650 km east of Dakar. Oromin considered developing the Goulouma West, the Goulouma South and the the Masato deposits as open pits and the Kerekounda deposit as both an open pit and an underground operation. In 2010, the company planned to focus on completing optimization studies for the development of a revised preliminary feasibility study (Oromin Explorations Ltd., 2009a, 11-12, 18-20; 2009b).

Randgold completed a prefeasibility study for the Massawa gold deposit, which is located in eastern Senegal about 75 km west of the border with Mali. As of December 31, indicated mineral resources at Massawa were estimated to be 17.43 Mt at an average grade of 4.16 g/t gold and inferred resources were estimated to be 6.24 Mt at an average grade of 3.39 g/t gold. The company, which held an 83.25% interest in the project, planned to complete an environmental and social assessment for Massawa and move the project to the feasibility stage in 2010 (Randgold Resources Ltd., 2010, p. 42-47).

**Iron and Steel.**—Luxembourg-based ArcelorMittal suspended the development of the Faleme iron ore project reportedly as a result of the global economic crisis. In 2008, the company had announced its plan to invest more than \$2 billion for the construction of the Faleme iron ore mine and to produce between 15 Mt/yr and 25 Mt/yr of iron ore beginning in 2011. The project, which was to be located in southeastern Senegal, was also to have included the construction of port facilities near Dakar and a 750-km railway line to link the mine to the port facilities (Magnowski, 2009).

#### **Titanium, Titanium Mineral Concentrates, and**

**Zircon.**—In August, MDL announced that it had begun a definite feasibility study for the Grande Côte Mineral Sands Project (GCMSP) in association with AMC Consultants of Australia. The GCMSP consisted of a series of deposits within a 2-km-wide and 80-km-long sand dune system that runs along Senegal's coastline about 50 km northeast of the capital city of Dakar. Inferred mineral resources were estimated to be 1.33 billion metric tons at an average grade of 2% heavy minerals. MDL planned to produce about 650,000 metric tons per year (t/yr) of ilmenite and 85,000 t/yr of zircon. The feasibility study was expected to be completed by the first quarter of 2010 (Mineral Deposits Ltd., 2009).

#### **References Cited**

- IAMGOLD Corp., 2010, 2009 annual report: Toronto, Ontario, Canada, IAMGOLD Corp., 152 p.
- Magnowski, Daniel, 2009, ArcelorMittal suspends Senegal iron ore project: Thompson Reuters, July 3. (Accessed January 12, 2010, at <http://www.reuters.com/article/idUSLH466420081013>.)
- Mineral Deposits Ltd., 2009, Quarterly report for the three months ending September 30, 2009: Melbourne, Australia, Mineral Deposits Ltd. press release, November 27, 2 p.
- Mineral Deposits Ltd., 2010, 2010 annual report: Melbourne, Australia, Mineral Deposits Ltd., 80 p.
- Oromin Explorations Ltd., 2009a, 2009 annual information: Vancouver, British Columbia, Canada, Oromin Explorations Ltd., 37 p.
- Oromin Explorations Ltd., 2009b, Preliminary feasibility study completed and new higher grade discoveries continue to be identified: Vancouver, British Columbia, Canada, Oromin Explorations Ltd. press release, 8 p.
- Randgold Resources Ltd., 2010, 2009 annual report: St. Helier Jersey, Channel Islands [United Kingdom], Randgold Resources Ltd., 161 p.

TABLE 1  
THE GAMBIA AND SENEGAL: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Country and commodity		2005 <sup>e</sup>	2006 <sup>e</sup>	2007	2008	2009 <sup>e</sup>
THE GAMBIA <sup>2</sup>						
Clay <sup>3</sup>	metric tons	13,700	13,700	6,713 <sup>4</sup>	NA <sup>4</sup>	NA
Ilmenite		--	--	672 <sup>4</sup>	-- <sup>4</sup>	--
Laterite <sup>3</sup>		250	250	187 <sup>4</sup>	115 <sup>4</sup>	100
Silica sand <sup>3</sup>		1,390	1,390	712 <sup>4</sup>	1,065 <sup>4</sup>	1,000
Zircon/rutile concentrate	metric tons	--	410 <sup>5,6</sup>	355 <sup>4</sup>	-- <sup>4</sup>	--
SENEGAL <sup>7,8</sup>						
Basalt <sup>3</sup>	metric tons	360	360	400 <sup>e</sup>	979	980
Cement, hydraulic		2,623 <sup>5</sup>	2,884 <sup>5</sup>	3,152	3,084	3,327 <sup>5</sup>
Clay <sup>3</sup>	metric tons	20	20	--	--	--
Clays, fuller's earth (attapulgitite)		127 <sup>5</sup>	140 <sup>5</sup>	150 <sup>e</sup>	167	200
Gold, mine output, Au content <sup>e,9</sup>	kilograms	600	600	600	600	5,354 <sup>5</sup>
Laterite <sup>3</sup>	metric tons	300	300	300 <sup>e</sup>	63	60
Lime		NA	NA	NA	82	100
Limestone <sup>3</sup>	metric tons	1,600	1,600	1,600 <sup>e</sup>	1,006	1,000
Natural gas <sup>e</sup>	thousand cubic meters	12,600	12,600	12,600	12,600	NA
Petroleum: <sup>10</sup>						
Crude oil	thousand 42-gallon barrels	374 <sup>5</sup>	388 <sup>5</sup>	317	99	249 <sup>5</sup>
Refinery products		870 <sup>5</sup>	313 <sup>5</sup>	648	896	737 <sup>5</sup>
Phosphate rock and related products: <sup>11</sup>						
Calcium phosphate-based fertilizers <sup>12</sup>		186 <sup>5</sup>	33 <sup>5</sup>	82	50	44 <sup>5</sup>
Crude rock:						
Aluminum phosphate <sup>e</sup>		4	4	4 <sup>e</sup>	4	4
Calcium phosphate <sup>12</sup>		1,451 <sup>5</sup>	584 <sup>5</sup>	691	645	948 <sup>5</sup>
Phosphoric acid, P <sub>2</sub> O <sub>5</sub> content		504	180 <sup>5</sup>	234	180	283 <sup>5</sup>
Salt		134 <sup>5</sup>	199 <sup>5</sup>	212	241	222 <sup>5</sup>
Sand <sup>3</sup>	metric tons	2,170	2,170	2,200 <sup>e</sup>	6,421	6,000

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. NA Not available. -- Zero.

<sup>1</sup>Table includes data available through November 30, 2010.

<sup>2</sup>In addition to the commodities listed, The Gambia also produced a variety of construction materials (laterite, sand, and shell), but information is inadequate to make reliable estimates of output.

<sup>3</sup>Values converted from cubic meters to metric tons. Specific gravity, in grams per cubic meter—basalt, 2.8; clay, 2.55; laterites, 2.55; limestone, 2.6; and sand, 2.6.

<sup>4</sup>Source: Geology Department of the Republic of The Gambia.

<sup>5</sup>Reported figure.

<sup>6</sup>From sales.

<sup>7</sup>In addition to the commodities listed, Senegal also produced sand and gravel and stone for local construction purposes, but information is inadequate to make reliable estimates of output.

<sup>8</sup>Source: Direction des Mines et de la Géologie, Republic of Senegal. The major source of information for the Senegal 2006 figures is Agence National de la Statistique et de la Démographie.

<sup>9</sup>Government estimate of unreported production of artisanal gold.

<sup>10</sup>Crude petroleum values have been converted from metric tons to 42-gallon barrels using a conversion factor of 7.4 barrels of crude petroleum per metric ton.

<sup>11</sup>Industries Chimiques du Sénégal was the main producer of phosphate rock in Senegal. Phosphate rock production excludes about 200,000 metric tons per year, which is estimated to be produced from other Senegalese sources.

<sup>12</sup>Source: Industries Chimiques du Sénégal.

TABLE 2  
THE GAMBIA AND SENEGAL: STRUCTURE OF THE MINERAL INDUSTRIES IN 2009

(Thousand metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of mine facilities	Annual capacity
THE GAMBIA				
Zircon/rutile concentrate		Carnegie Minerals plc and Astron Ltd.	Sanyang district	20.
SENEGAL				
Attapulgitite		Senegal Mines (Government, 49%, and private, 51%)	240 kilometers south of Dakar	100.
Do.		Société Senegalaise de Phosphates de Thies SA (private, 100%)	Lam Lam	NA.
Cement		Les Ciments du Sahel S.A. (private, 100%)	Kirene plant	600.
Do.		Sococim Industries (Vicat S.A.)	Rufisque, east of Dakar	2,600.
Gold	kilograms	Sabodala Gold Operations S.A. (SGO) (Mineral Deposits Ltd., 90%, and Government, 10%)	650 kilometers east of Dakar	5,400.
Petroleum products		Total S.A. (54%), Royal Dutch Shell plc (23%), Exxon Mobil Corp. (13%), Government (10%)	Refinery, 23 kilometers from Dakar	1,226.
Phosphate rock, calcium		Industries Chimiques du Sénégal Group (Archean Group, Government of India and Indian Farmers Fertilizer Cooperative Ltd., 85%, and Government of Senegal, 15%)	Taïba Mine, 50 kilometers from Dakar	2,000.
Do.		Société Senegalaise de Phosphates de Thies SA (private, 100%)	Lam Lam, Sebikhotane, and Allou-Kagne	NA.
Phosphoric acid		Industries Chimiques du Sénégal Group (Indian Farmers Fertilizer Cooperative Ltd., 85%, and Government, 15%)	Darou I plant, Darou Khoudoss	660 P <sub>2</sub> O <sub>5</sub> .

Do. Ditto. NA Not available.