THE MINERAL INDUSTRY OF

GABON

By Thomas S. Jones

In 1996, mineral resources played a key role in the economy of Gabon, which for African countries had a comparatively high per capita gross domestic product (GDP). Gabon's mineral economy continued to be dominated by the oil sector, which has been accounting for about three-quarters of total export revenues, one-half of Government revenues, and one-third or more of GDP. Nonfuel minerals, chiefly manganese and uranium, have been contributing about 2% to GDP. *(See table 1.)*

Oil export revenues of more than $2 billion represented nearly 80% of total 1996 export revenues. The 50% of Gabon's petroleum exports that went to the United States represented 2.5% of U.S. crude imports. By value, Gabon's next most important export commodities were, in descending order, wood, manganese, and uranium.

Almost one-half of Gabon's imports were equipment, machinery, and manufactured goods destined to support the petroleum and mining sectors. France provided a significant proportion of imports.

Establishment of a new mining code was under consideration by the Government. Pending its replacement, the basic mining law of Gabon was the 1962 Mining and Petroleum Code, law 15/62, as modified in 1968 by law 16/68 and in 1970 by Decree No. 981. The mining fiscal regime is now governed by Ordinance No. 38/79/PR. Petroleum exploration and exploitation were further regulated by laws 14/74 and 14/82. The Ministère des Mines, de l'Energie et du Petrole administered the mineral industry. Mineral concession contract terms emphasized spending commitments by private companies. Crude petroleum production-sharing agreements provided for Government participation as a joint-venture partner, in addition to a royalty of 20%. The Gabonese environmental law, law 16/93 Relating to the Improvement and Protection of the Environment, contained a section that addresses mining and petroleum activities. The Direction Générale de l'Environnement was responsible for environmental oversight.

The Government had a share in nearly every mineral venture, which, for those listed in table 2, ranged from 25% to more than 90%. *(See table 2.)* The Government, however, was seeking to diversify its partnership mix by soliciting new international participants. Among foreign companies active in Gabon's mineral industry, many were subsidiaries of French companies, and several U.S. firms were active in petroleum exploration.

The most important infrastructure unit in Gabon was the 649-kilometer (km)-long Trans-Gabon Railway, operated by the Government's Office du Chemin de Fer Transgabonais (OCTRA), that linked Franceville in the southeast with the Atlantic coast port of Owendo. The railroad, an agent for mineral and industrial development, was used for shipping cement clinker, equipment, fuel, manganese, uranium, and wood logs. OCTRA, as well as Société d'Electricite de d'Eau du Gabon, the national electricity and water monopoly, was scheduled for privatization under the provisions of a law that became effective in February 1996. This law was in response to conditions that had been established by the International Monetary Fund. Gabon's petroleum pipeline infrastructure was particularly well developed and fed coastal loading terminals at Cap Lopez near Port Gentil and Gamba to the southwest.

Crude oil production increased in 1996 to an average rate of 368,000 barrels per day (bbl/d), thus continuing the trend begun in 1987. The 1996 output was above the quota of 287,000 bbl/d set by the Organization of Petroleum Exporting Countries (OPEC), which Gabon had joined in 1975. Gabon left OPEC in mid-1996 because of dissatisfaction with its flat-rate dues structure. Gabon viewed OPEC's policy as discriminatory toward smaller producers and had argued for a fee based on a member's production.

Petroleum was produced by three companies, in order of decreasing output, Shell Gabon of the Netherlands, Elf Gabon of France, and Perenco Plc. (formerly Kelt Energy Plc.) of the United Kingdom. Shell Gabon accounted for about three-fifths of Gabon's total production, mainly from the onshore Rabi-Kounga field, the interests in which were divided between Shell Gabon, 42.5%; Elf Gabon/Société National Elf Aquitaine Group, 47.5%; and Amerada-Hess Production Gabon Inc., 10%. Elf Gabon accounted for somewhat more than one-third of total production, mainly from the offshore Anguilee/NE/SE, Hylia, and Torpille/NE fields and the onshore Avocette and Coucal fields. Perenco's production was about 7% of the country's total.

In 1996, 7 exploratory wells and 22 development wells were drilled in Gabon. Production-sharing contracts with the state were a standard feature of new petroleum exploration and development activities. Contracts for offshore sites included those with Amoco Gabon BV and Phillips Petroleum Gabon Ltd. for exploration of the Gryphon Marin block off southern Gabon, Arco International Oil and Gas for the deep offshore block D-93 of the Tolo license, Elf Gabon for the Akori and the Sika blocks, Marathon Oil Co. (Marathon Petroleum Akoumba Ltd. unit) for the Akoumba Marin tract in the North Gabon Basin, and Shell Gabon for the Kenguérié and Bam-Bam areas between Libreville and Port Gentil. Contracts for onshore sites included those with Canada's Chauvco Resources Ltd. for the Remboué concession, Elf Gabon for the Mikoumé and Mpaga

blocks, Canada's Ocelot Energy Inc. for the Panthere-Nze and M'Bindji permits, and Shell Gabon for the Inéka block near Port Gentil. A contract of the Santa Fe Energy Resources of Gabon unit of Santa Fe Energy Resources Inc. was for the Mondah Bay block, which included onshore and offshore areas, north of Libreville.

As of January 1, 1997, Gabon had 1.34 billion barrels of proven oil reserves and 14,000 million cubic meters (m^3) of natural gas (Oil & Gas Journal, 1997). Most of Gabon's production of natural gas was flared or reinjected for reservoir pressure maintenance. Of 2,600 million m^3 of gross production in 1994, 1,800 m^3 was flared, 600 m^3 was reinjected, and only about 200 million m^3 was marketed, mostly for use in electricity generation or as a refinery fuel.

Among nonfuel minerals, diamonds were produced by artisanal miners mostly at Monkongonio in the south of the country. Diamond occurrences are widespread in Gabon but concentrations are generally low.

Gold production also was by artisanal miners, almost all through the handworking of relatively small placer and eluvial deposits at sites such as Etéké, Kolissen, Makokou, Mitzic, Ndangui, and Ndjolé. Canada's Golden Star Resources Ltd., through its Pan African Resources Corp. (PARC) subsidiary, was one of the more active among foreign firms exploring for gold in Gabon. PARC, however, discontinued its efforts on the Etéké license because it was not able to identify a sufficiently promising prospect (Golden Star Resources Ltd., 1997).

Manganese ore was produced by Compagnie Minière de l'Ogooué S.A. (Comilog) by open pit methods from a number of zones on the Bangombé Plateau at Moanda. The ore produced typically contained 51% manganese, including high-grade ore (48% to 52% manganese) for metallurgical and hydrometallurgical uses and battery-grade ore (82% to 85% manganese dioxide). All marketable product was exported via shipment to the port of Owendo on the Trans-Gabon Railway using Comilog locomotives and rolling stock. According to Gautier (1997), of total manganese resources on four plateaus near Moanda a reserve volume of 250 million metric tons (Mt) was considered to be proven and corresponded to 130 Mt of marketable concentrates. As has historically been the case, a significant proportion of Comilog's ore output went to Société du Ferromanganèse de Paris-Outreau in France. In June, France's Eramet Group formally completed its acquisition of a total of 46% of Comilog's shares. By thus becoming the largest shareholder, Eramet took over management of Comilog. Eramet and Comilog subsequently initiated a restudy of the feasibility of establishing a ferromanganese smelter in Gabon. In contrast to a previous study of this possibility, the latest study focused on siting a plant near the mine. Coal shipped there as backhaul in otherwise empty ore cars was a possible fuel for the plant.

Uranium was mined in the southeast at Mounana in Haut Ogooué Province by Compagnie des Mines d'Uranium de Franceville (Comuf). Comuf was one of the world's smaller producers, and exported most of its output to France.

Deposits of other minerals having the possibility of commercial exploitation included those of barite, iron ore, and phosphate. Of these, extraction of phosphate from the Mabounié carbonatite complex near Lambaréné in the west-central portion of the country appeared closest to commercialization. This was a project of the Société Minière du Moyen Ogooué consortium, of which the Government owned 62%. From a geological resource of 140 Mt containing 24% P_2O_5, it was projected that a production of 2 million metric tons per year of concentrate containing about 39% P_2O_5 could be obtained for at least 20 years. The most likely method of transporting product to market appeared to be a slurry pipeline from Mabounié to Lambaréné and then river transport to Port Gentil. Recovery of a niobium coproduct also was under study. In southwestern Gabon, a barite deposit at Dourekiki, assessed as containing more than 3 Mt, had an average grade of 46% $BaSO_4$ and included an enriched zone with an average grade of 65% $BaSO_4$. If developed, this deposit could supply a high density ingredient of mud used in drilling oil wells. Iron ore deposits are located in the Makokou area of northeastern Gabon; the deposit at Belinga is the most important. On the basis of exploration done in the 1970's, resources have been assessed at 566 Mt with an iron content of 64%. Development of the deposit was dependent on building a rail connection from Bélinga to Booué, a distance of about 230 km.

Gabon, therefore, has some potential to enlarge its mineral sector, but its immediate future for minerals hinges, as in the recent past, on manganese, petroleum, and uranium. Petroleum is expected to continue to account for a significant proportion of the Nation's economy, which thus remains highly susceptible to fluctuations in oil demand and prices. The Nation's manganese industry could expand if a smelter is established. Uranium production could, however, end soon because of market conditions.

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TABLE 1
GABON: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/		1992	1993	1994	1995	1996 e/
Cement:						
Clinker		116,000	132,398	125,609	140,845	142,000
Cement, hydraulic 3/		138,381	141,283	147,798	153,953	155,000
Diamond, gem and industrial e/	carats	500	500	500	500	500
Gas, natural, gross 4/	million cubic meters	155	153	129	150 e/	150
Gold, mine output, Au content e/ 5/	kilograms	70	120	72	70 r/	70
Manganese:						
Metallurgical-grade ore, gross weight (50% to 53% Mn) 6/		1,455,000	1,257,000 r/	1,366,000 e/	1,844,000 r/ e/	1,933,000
Pellets, battery- and chemical-grade, gross weight (82% to 85% MnO_2)		101,000	33,000 r/	70,000 e/	86,000 r/ e/	50,000
Total 6/		1,556,000	1,290,000	1,436,000	1,930,000	1,983,000
Petroleum:						
Crude 7/	thousand 42-gallon barrels	107,000	114,000	126,000	133,000	134,000
Refinery products	do.	6,200 r/	5,800 r/	6,900 r/	6,900 r/	6,900
Uranium, content of concentrate		545 r/	592	589	653 r/	623 8/

e/ Estimated. r/ Revised.

1/ Table includes data available through February 4, 1998.

2/ In addition to the commodities listed, a variety of crude construction materials (clays, sand and gravel, and stone) is also produced, but output is not reported and available information is inadequate to make reliable estimates of output levels.

3/ Includes cement produced from imported clinker.

4/ Does not include gas flared or reinjected into reservoirs for repressuring.

5/ Gold production figures do not include production smuggled out of the country, which in recent years was estimated to exceed 400 kilograms per year.

6/ Data are rounded to four significant digits.

7/ Reported in metric tons. Barrels are calculated at the rate of 7.305 barrels per ton and rounded to three significant digits.

8/ Reported figure.

TABLE 2
GABON: STRUCTURE OF THE MINERAL INDUSTRY IN 1996

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement:				
Cement		Société des Ciments du Gabon (Government, 91.4%; Elf Gabon, 8.6%)	Clinker-grinding plant at Owendo	270
Do.		do.	Clinker-grinding plant at Franceville	130
Clinker		do.	Clinker plant at N'Toum, 40 kilometers east of Libreville	350
Manganese, ore		Compagnie Minière de l'Ogooué (Eramet, 46%; Government, 28%; Gengabon, 15%)	Open-pit mine at Moanda	2,600
Petroleum, crude	thousand 42-gallon barrels	Elf Gabon (Société Nationale Elf Aquitaine 75%; Government, 25%)	Anguille, Barbier, Baudroie, Bréme, Gonelle, Grondin Marine, Mandaros, and Torpille offshore fields	30,000
Do.	do.	do.	Avocette, Coucal, and Hylia fields	25,000
Do.	do.	Shell Gabon (Royal Dutch-Shell, 75%; Government, 25%), 42.5% interest in field	Rabi Kounga field, 100 kilometers north of Gamba	75,000
Do.	do.	do.	Gamba-Ivinga field, onshore Gamba	4,000
Do.	do.	Perenco Plc., 45% interest in field	Oguendjo offshore field, 85 kilometers southeast of Port Gentil	3,000
Do.	do.	Perenco Plc., 75% and Government, 25% joint venture	Lucina Marine offshore field, 15 kilometers south of Mayumba	2,000
Do.	do.	Perenco Plc., 50% and London and Scottish Marine, 50% joint venture	Obando, Octopus, and Pelican offshore fields, 60 kilometers southwest of Port Gentil	5,000
Petroleum products	do.	Société Gabonaise de Raffinage (Government, 25%; Elf Gabon, 18.7%; Total, 18.7%; Agip, 6.2%; BP, 6.2%; Fina, 6.2%; Mobil, 6.2%; Shell, 6.2%; and Texaco, 6.2%)	Refinery at Port Gentil	8,760
Uranium, oxide (metal content)	metric tons	Compagnie des Mines d'Uranium de Franceville (Compagnie Francais de Mokta, 39.2%; Compagnie Générale des Matières Nucléaires, 18.8%; Government, 24.7%; Minatom, 13%; and others, 4.3%)	Two mines near Mounana	1,500