



# 2009 Minerals Yearbook

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## ANGOLA

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# THE MINERAL INDUSTRY OF ANGOLA

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Angola's mineral industry was dominated by diamond and petroleum production; petroleum however, was by far the major driving force of the economy, accounting for about 85% of the gross domestic product (GDP), 95% of exports, and 85% of Government revenues in 2009. Diamond production accounted for about 1% of the GDP compared with 1.2% in 2008. From 2005 to 2008, on average, Angola accounted for about 5% of the world's total diamond production by volume and for about 10% of the world's total diamond production by value. Artisanal diamond production from alluvial deposits, which, according to Government authorities, had historically accounted for about 20% of the country's total diamond output, was on a decreasing trend. Other mineral commodities produced in the country included cement, granite, marble, and salt. In terms of its geologic framework, Angola had vast mineral resources available for prospecting and development; basic geologic surveys, however, had been conducted in only about 40% of the country's territory because up to 2002, Angola had been at war for more than 40 years, first from 1961 to 1975, as it struggled for independence from Portugal, and then from 1975 to 2002, as the country fought a 27-year-long civil war. Undeveloped mineral resources included beryllium, clay, copper, gold, gypsum, iron ore, lead, lignite, manganese, mica, nickel, peat, phosphate rock, quartz, silver, tungsten, uranium, vanadium, wolfram, and zinc (Kimberley Process Certification Scheme, 2009; Banco Africano de Investimentos, 2010, p. 39-41; National Private Investment Agency, 2010; U.S. Department of State, 2010; Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, oral commun., August 24, 2009).

## Government Policies and Programs

The nonfuel mineral sector in Angola is regulated by Mining law No. 1/92 of January 17, 1992, and by Diamond law No. 16/94 of October 7, 1994. All mineral rights in Angola belong to the state, and all mining and prospecting contracts must be approved by the Conselho de Ministros [Council of Ministers]. After peace was restored in 2002, the Government established the Technical Commission for the Revision of Mining Legislation (CTRLM), whose main objective was the creation of a mining code. The Government also established an Inter-Ministerial Commission for the Protection of Diamond Resources (CIPRED), whose main objective was to identify and characterize artisanal diamond mining areas and to create an integrated program for the protection of the country's mineral endowment. To this end, the Government had approved a Diamond Mining Code in 2006, which in 2009 was still in the process of being ratified and officially published in the National Gazette (Mankenda Ambrose, Minister of Mines, Ministry of Geology and Mines of Angola, and Lourenço Mahamba Baptista, Deputy Minister of Mines, Ministry of Geology and Mines of Angola, oral commun., August 24, 2009; and Paulo Mvika,

National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

The new diamond mining code was aimed at trying to control illegal mining in the Lunda region (which comprises the Provinces of Lunda Norte and Lunda Sul) where most artisanal diamond mining took place. The code provides for the designation of exclusive areas for artisanal mining. These areas comprise properties that had been relinquished by Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), which is a Government-owned diamond company, after exploration deemed them uneconomical to develop as industrial operations. As proposed in the new code, an artisanal miner would be defined broadly as an Angolan citizen who is at least 18 years old, holds a 'senha mineira', or mining permit issued by the Ministry of Geology and Mines, and uses nonmechanized methods and means to dig for diamond. The Government, through the Ministry of Geology and Mines in Luanda, was to define, limit, and demarcate the areas where artisanal mining would be permitted in the Lunda region. The holder of a mining permit may create a work team composed of his or her aggregated family or residents of his village, not to exceed five individuals. The permit holder may, however, request an increase in the number of members by submitting a request to the Ministry of Geology and Mines. Foreign citizens are prohibited from participating in artisanal mining activities, as are Angolan citizens who have not resided in the area for at least 10 years. Although the state is responsible (through the Ministries of Environment and of Geology and Mines) for the damage caused to the environment by artisanal mining activities, the permit holder is required to contribute 1% of his or her sales to the recovery of environmental damages. Diamond produced by artisanal miners is to be sold exclusively to Sociedade de Comercialização de Diamantes de Angola (SODIAM), and the value of the diamond purchased is to be paid by SODIAM to the permit holder immediately after the value has been assessed and the diamond has been delivered to the buyer. The royalty tax for artisanal mining would be 5% of the value of the diamond (Mankenda Ambrose, Minister of Mines, Ministry of Geology and Mines of Angola, and Lourenço Mahamba Baptista, Deputy Minister of Mines, Ministry of Geology and Mines of Angola, oral commun., August 24, 2009, and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

In terms of the establishment and demarcation of the areas designated for artisanal mining, the Government selected Muquita as the first artisanal diamond mining pilot area. Muquita covers an area of 19,568 hectares (ha) and is located about 50 kilometers (km) from the Municipality of Lucapa in Lunda Norte Province. This area had been extensively mined illegally by Angolan and Congolese artisanal miners. The Government chose the Lunda Norte Province as the area to implement the new mining regulation based upon studies performed in the area during colonial times, which

had indicated those areas that were not economically feasible to mine at an industrial scale. The Muquita area was divided into 130 land-lots, and each lot was subdivided into 150 blocks of 1 ha, or 10,000 square meters. This area, including the lots and blocks, was codified and mapped (Ministerio da Geologia e Minas, 1992, p. 1-5; Mankenda Ambrose, Minister of Mines, Ministry of Geology and Mines of Angola, and Lourenço Mahamba Baptista, Deputy Minister of Mines, Ministry of Geology and Mines of Angola, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

The Government also initiated programs that sought, among other things, to rehabilitate the country's infrastructure and build industrial development centers. The Ministry of Industry planned to complete 12 industrial hubs in the Provinces of Bengo, Benguela, Bie, Cabinda, Huila, Huambo, Kwanza-Norte, Luanda, Uige, and Zaire and to complete construction work at the Luanda-Bengo Zona Económica Especial (ZEE—Special Economic Zone), which was to be financed by the Government of China through a \$65 million credit line, by 2011. The Luanda-Bengo ZEE was expected to house about 700 factories and to employ 3,000 people (Banco Africano de Investimentos, 2010, p. 39-41).

## Production

Owing to the global financial crisis of 2008-09, the demand for and the price of diamond registered a drop in international markets, which resulted in a slowdown of diamond mining operations in Angola. ENDIAMA estimated that production would reach about 7 million carats in 2009 compared with 8.9 million carats in the previous year. In 2008, artisanal diamond production decreased by about 39.3% to nearly 736,000 carats compared with about 1,213,000 carats in 2005. Artisanal diamond production accounted for about 8.3% of the country's total diamond production by volume in 2008 and for about 18.3% of the country's total diamond production by value, which was a significant decrease from 2005 levels when production by volume and by value were 17% and 33.6%, respectively. As of June 2010, no 2009 statistics for any commodities produced in the country were available. Estimates of mineral production for 2009 are in table 1 (Kimberley Process Certification Scheme, 2009; Banco Africano de Investimentos, 2010, p. 39-41; Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

## Structure of the Mineral Industry

The Ministerio da Geologia e Minas (MGM) is the Government entity responsible for the negotiation of mineral rights contracts, for enforcing mining laws, and for executing the Government's policy regarding geologic and mining activities. The MGM is also the entity responsible for coordinating efforts regarding Kimberley Process Certification Scheme (KPCS) compliance. The KPCS is an international certification scheme established to prevent trade in diamond that funds conflict and violence. Corpo Especial de Fiscalização

y Segurança de Diamantes (CSD) is the Government entity responsible for ensuring the security of Angola's diamonds as they travel to the capital city of Luanda for export from the respective mining operations and buying houses located throughout the country. The CSD reports directly to the President through the *Chefe do Serviço de Informações* [Chief of Information Services]. CSD has administrative, financial, and operational autonomy but works closely with the National Police and Customs.

ENDIAMA is responsible for creating partnerships with international companies prospecting for diamond and is a partner in all diamond ventures. ENDIAMA's subsidiaries include SODIAM, which is in charge of the marketing, sale, and trade of all diamond produced in Angola and the entity responsible for KPCS compliance; and ENDIAMA *Prospecção e Produção S.A.R.L.*, which oversees all ENDIAMA's mining and prospecting interests. ENDIAMA can also enter into joint-ventures with foreign diamond companies operating in the country. *Sociedade Nacional de Combustíveis de Angola* (Sonangol) is the Government-owned company responsible for petroleum exploration and production. Table 2 is a list of major mineral industry facilities (Lourenço Mahamba Baptista, Deputy Minister of Mines, Ministry of Geology and Mines of Angola, and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, oral commun., August 24, 2009).

## Mineral Trade

In 2009, Angola's exports to the United States were valued at about \$9.3 billion compared with about \$18.9 billion in 2008. Of this amount, crude petroleum accounted for about \$9 billion; fuel oil, about \$272 million; and gem-quality diamond, about \$48 million. Imports from the United States were valued at about \$1.4 billion in 2009 compared with \$2 billion in 2008; these included nearly \$432 million in drilling and oilfield equipment and about \$24 million in excavating machinery (U.S. Census Bureau, 2010a, b).

In the diamond sector, Angola's export regime is based on a monopolistic system under which SODIAM (alone or in joint venture with foreign and local companies) acts as the single channel for both the purchase and export of all rough diamond produced in the country. As of yearend 2009, Angola did not import rough diamond, although it had the capability to cut and polish rough diamonds through Angola Polishing Diamonds Inc., which was the country's only cutting and polishing factory (Lourenço Mahamba Baptista, Deputy Minister of Mines, Ministry of Geology and Mines of Angola, and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, oral commun., August 24, 2009).

## Commodity Review

### Metals

**Aluminum.**—In May, Norsk Hydro ASA of Norway signed a preliminary agreement with the Government to explore the possibility of developing an integrated aluminum production project. The project would include the construction of a

600,000-metric-ton-per-year (t/yr) aluminum smelter and a 635-megawatt-capacity hydroelectric powerplant (Metal Bulletin, 2009; Norsk Hydro ASA, 2009).

**Copper.**—On February 4, Hansa Resources Ltd. of Canada announced that it would not proceed to a definitive agreement for the rights to the Mavoio-Tetelo-Bembe exploration project, citing economic reasons resulting from the global financial crisis. The company had signed a memorandum of understanding with Angola Petroleum Services S.A.R.L. in 2008 to acquire a 70% interest in the project. The Mavoio-Tetelo-Bembe project, which is located in Uige Province near the border with the Democratic Republic of the Congo [Congo (Kinshasa)], included the exploration rights to the historic Mavoio copper mine and to the Bembe and the Tetelo copper deposits. The Mavoio Mine operated from 1937 to 1961 as both an open pit and an underground mine. The company estimated that the Tetelo prospect contained resources ranging between 6.2 million metric tons (Mt) at a grade of 3.1% copper and 12.8 Mt at a grade of 3.9% copper based on historic drilling conducted during the 1940s and 1970s. Other mineral occurrences within the property reportedly included cobalt, gold, lead, manganese, silver, vanadium, and zinc (Hansa Resources Ltd., 2008, 2009).

**Gold.**—About 90% of gold production in Angola was from artisanal mining mostly from the Maiombe region of Cabinda Province. Alluvial gold was also recovered from small tributaries along the Luali River in central Cabinda and from alluvial deposits in the Provinces of Cuanza Norte, Cunene, and Huila. A primary gold deposit (known as Mpopo) containing auriferous quartz veins was known to exist about 36 km southwest of Cassinga. The deposit was estimated to contain about 700,000 metric tons (t) of ore at a grade of 8 grams per metric ton (g/t) gold. There were no industrial gold mining operations in the country as of yearend 2009 (National Private Investment Agency, 2010).

At least one company, Gilla Inc. of Nevada, explored for gold. Gilla had acquired the mining rights to the Salutar Comercio gold exploration concession from Terra Merchant Resources of Canada in 2008. The property is located 120 km north of Cabinda. The company planned to carry out stream-sediment sampling in 2009 to identify drilling targets on the concession area (Gilla Inc., 2009).

**Iron Ore.**—The Government planned to invest \$1 billion over 4 years to redevelop the Cassinga iron ore mine in association with Antex S.A. of Cuba. Iron ore production from Cassinga Mine ceased in 1975 as a result of the drop in world iron ore prices and the destruction of segments of the Caminhos de Ferro railway (formerly known as the Mocamedes railway) that had connected the mine to Namibe Port (formerly known as Mocamedes Port) during the civil war. During the early 1970s, the mine produced on average about 6 million metric tons per year (Mt/yr) of iron ore. State-owned iron ore company Empresa Nacional de Ferro (Ferrangol) had completed the rehabilitation of the Cassinga Mine in 1986, but several attempts to revive production failed and, in 1998, the Government transferred all mining rights to a new company, Sociedade Mineira de Kassinga. Several foreign companies had shown interest in the redevelopment of the mine, but investment

interests dwindled following the 2008 global financial crisis. About 34 Mt of reserves at a grade of 44% iron and 1 billion metric tons of reserves at a grade of 30% iron have been estimated to remain at Cassinga. The development of the mine could also include the mining of the Cassala-Kitungo deposits, which have been estimated to contain 200 Mt of reserves at a grade of 25% to 35% iron. Cassinga Mine is located in the Jamba district in southern Huila Province. Chinese companies Hywai and Sinohydro Corp. were in the process of completing the reconstruction of 505 km of the Caminhos de Ferro Namibe railway and to rehabilitating the Namibe Port. The project was estimated to cost \$3 billion and was projected to be finished by mid-2010 (Jolly, 1976; Africa Mining Intelligence, 2009a; Railways Africa, 2009; Thompson, 2009; National Private Investment Agency, 2010).

### *Industrial Minerals*

**Diamond.**—Most diamond prospecting in Angola was done by Portuguese interests prior to 1975, but such prospecting activities were limited to Lunda Norte Province and Lunda Sul Province. As for the rest of the country, the information on diamond resources is still incipient. Alluvial and eluvial diamond deposits occur in the Provinces of Bie, Cuando Cubango, Cuanza Sul, Cunene, Huambo, Huila, Lunda Norte, Lunda Sul, Malange, Moxico, and Uige. Other deposits are known to exist in coastal areas and offshore. About 700 kimberlite pipes containing estimated reserves of 50 to 70 million carats are known to exist in the country. These kimberlite pipes are believed to be structurally controlled by a fault line that runs from the southwest of the country into the Provinces of Benguela and Huila through Huambo and Bie and into Lunda Norte and Lunda Sul Provinces in the northeast. The location of this fault line coincides with the location of the country's major watersheds. Below this fault line, the rivers that form part of the Okavango and the Zambezi systems flow south and the rivers above the fault line flow north into Congo (Kinshasa). Over time, both northward- and southward-flowing rivers and their tributaries have eroded kimberlite pipe extrusions and created extensive alluvial and river-bottom deposits in the northern and southern Provinces. Detailed geologic mapping that could provide further insight into the location of both primary (kimberlites) and secondary (alluvial) diamondiferous deposits have not been developed. Aero-geophysical and geophysical surveys have been conducted in only about 10% of the areas that have been deemed prospective for diamond (Partnership Africa Canada, 2007, p. 2-3; Lourenço Mahamba Baptista, Deputy Minister of Geology and Mines, Ministry of Geology and Mines, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

Angola's diamond sector was open to foreign investment. Foreign companies interested in prospecting for and mining diamond in Angola must submit a letter of intent to ENDIAMA or to the Ministry of Geology and Mines. The company must show technical capacity, financial depth, suitability, experience as a mineral producer, and willingness

to participate in social and economic development programs within the local communities in which it will operate. As of August 2009, 183 diamond concession areas were available for development. Of the 14 diamond mines in operation in the country, 2 were primary deposits and included the Catoca Mine, which was operated by Sociedade Mineira de Catoca Lda., and the Camatchia-Camagico Mine, which was operated by Luó-Sociedade Mineira do Camatchia-Camagico; the remaining operations were alluvial mines. The companies involved in alluvial mining included Associação em Participação Chitotolo, Sociedade de Desenvolvimento Mineiro de Angola S.A.R.L (SDM), Sociedade Mineira do Cuango, and Sociedade Mineira do Lucapa Ltd. (SML) (Lourenço Mahamba Baptista, Deputy Minister of Geology and Mines, Ministry of Geology and Mines, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

The Chitotolo alluvial mine covers an area of about 5,400 square kilometers. It averaged about 25,000 carats per month, and 85% to 90% of the stones were of gem quality. The mine is located about 95 km southeast of Dundo and employed about 820 people in 2009; 90% of the employees were Angolan nationals. The average grade at Chitotolo ranged between 0.8 and 1 carat per cubic meter, and in some areas within the concession the grade was as high as 10 carats per cubic meter. The amount of overburden that lies above the mineralized zones in certain areas within the mine could reach as much as 30 meters (Mr. Domingos Alfredo Machado, Administrator for Joint Venture Management, Empresa Nacional de Diamantes de Angola E.P., oral commun., August 24, 2009).

The SDM Mine produced diamond from both primary and secondary deposits located within the hydrographic basin of the Cuango River in northeastern Angola. SDM was a 50/50 joint venture between ENDIAMA and Odebrecht Mining Services Inc. The mine generated annual revenues of about \$100 million. Of the 1,100 people employed at the mine, about 88% were Angolan nationals (Lourenço Mahamba Baptista, Deputy Minister of Geology and Mines, Ministry of Geology and Mines, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

The SML Mine was a joint venture between ENDIAMA (51%) and Sociedade Portuguesa de Empreendimentos (49%). The company's operations were located in the municipality of Lucapa, Lunda Norte Province, within the hydrographic basins of the Chicapa River and the Luachimo River. Diamond at SML was mined from conglomeratic secondary deposits that occur in river beds, terraces, and valleys. SML had four mining projects: the Calonda project, the Lucapa project, the Mufuto Norte project, and the Yetwene project. Owing to the global economic crisis, Yetwene was put on care-and-maintenance status in 2009. The remaining three projects employed about 2,000 people, of which 87% were Angolan nationals (Lourenço Mahamba Baptista, Deputy Minister of Geology and Mines, Ministry of Geology and Mines, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

Before the global financial crisis, ENDIAMA had announced plans to increase production to about 10 to 15 million carats per year; owing to the change in economic conditions, however, those plans were put on hold in 2009. Despite the crisis, some new alluvial operations came online during the year and the company expected to see other mines (kimberlite mines) come online in the next 2 to 3 years (Lourenço Mahamba Baptista, Deputy Minister of Geology and Mines, Ministry of Geology and Mines, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

The Fucauma, the Luarica, and the Yetwene Mines remained closed during the year. Petra Diamonds Ltd. of the United Kingdom relinquished its interest in the Alto Cuilo and the Langué diamond projects. The company had acquired BHP Billiton's 75% interest in the Alto Cuilo project and 25% interest in the Luangué project in 2008, but decided to withdraw from these projects following the onset of the global financial crisis and because placing the project on care-and-maintenance status was not an option permissible under the contract with the Government. The company had reportedly spent about \$90 million on the evaluation of the Alto Cuilo prospect, which consisted of a cluster of more than 70 kimberlite pipes; the property is located in the northeastern part of the country (Africa Mining Intelligence, 2009b; Australia's Paydirt, 2009; Petra Diamonds Ltd., 2010, p. 68).

During the civil war years, artisanal miners mostly from Congo (Kinshasa), but also from Gambia, Mali, and Senegal, settled in Angola to prospect for diamond. The incursion of illegal artisanal miners into Angola's territory was facilitated by the Government's inability to control and secure the diamond producing areas during the civil war. The Government estimated that, historically, approximately 80% of artisanal miners in Angola were foreigners. Most illegal miners settled in the Provinces of Lunda Norte and Lunda Sul. In 2003, to control the flow of illegal artisanal miners in these two Provinces, the Government began deporting illegal miners from its territory. According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), there have been at least six major waves of Congolese expulsions from Angolan territory since 2003. The total number of foreign citizens expelled from these areas was estimated to range somewhere between 100,000 and 300,000. The vast majority of those expelled were Congolese miners who had dominated the sector since the 1990s when many entered the country to mine for the União Nacional para a Independência Total de Angola (UNITA) rebel group. Nongovernmental organizations had documented death, rape, the forced administration of emetics and laxatives, forced marches across the border, and the bundling of these illegal Congolese citizens onto airplanes without their possessions.

In October 2009, as a retaliatory response to such deportations, the Government of Congo (Kinshasa) began extraditing Angolan citizens from its national territory, reportedly setting the stage for a possible humanitarian crisis owing to the lack of food, medicine, sanitation facilities, and shelter to supply those extradited. Many of those expelled by the Government of Congo (Kinshasa) had been Angolan refugees during the civil war. As of early November, both Governments

had agreed to stop the deportations. The expulsions of Congolese miners were only partially effective in reducing cross-border activity because many of those extradited returned to the country shortly after their expulsion (Lourenço Mahamba Baptista, Deputy Minister of Geology and Mines, Ministry of Geology and Mines, oral commun., August 24, 2009; and Paulo Mvika, National Director of Mines, Ministry of Geology and Mines of Angola, written commun., August 24, 2009).

**Gypsum.**—Angola began producing gypsum from its Fábrica de Gesso do Sumbe plant in March. The plant had a production capacity of 13,000 metric tons per month of gypsum, about 6,000 t of which was crushed gypsum to be used in the manufacture of cement, 4,000 t was nonchemical soil additives to be used in the agricultural sector, and 3,000 t was calcined gypsum to be used in the construction sector. The plant was located in Alto Chingo within the municipality of Sumbe in Cuanza Sul Province (Agencia AngolaPress, 2009a, b).

### **Mineral Fuels**

**Petroleum.**—Angola was a member of the Organization of the Petroleum Exporting Countries. The country produced petroleum from both onshore and offshore deposits, including offshore the enclave of Cabinda. Four out of the more than ten international petroleum companies operating in Angola accounted for about 95% of the country's total petroleum output; these included BP p.l.c. of the United Kingdom, Chevron Corp. and Exxon Mobil Corp. of the United States, and Total S.A. of France. Table 2 is a list of major mineral industry facilities (Petroleum Economist, 2009).

### **Outlook**

Despite the global financial crisis, that affected the country's economy in 2008 and 2009, Angola is expected to rank among the world's top five fastest growing economies in 2010 in terms of its GDP growth. The country's forecasted 9.3% GDP growth rate for 2010 is preceded only by the projected growth in the economies of Qatar (18.5%), Turkmenistan (15.3%), and Congo (Brazzaville) (12.2%) (International Monetary Fund, 2009). Such growth in Angola's economy is expected to be driven primarily by the oil sector and, to a lesser extent, by the diamond sector. In the longer run, however, new projects in the nonfuel minerals sector, such as that of the development of a new aluminum smelter, the redevelopment of the Cassinga iron ore mine, the possibility of redeveloping the country's copper deposits, and the possibility of developing new cobalt, gold, lead, manganese, silver, vanadium, and zinc deposits are likely to add to such growth significantly. Although the country's dilapidated infrastructure will continue to present challenges to investors in the short run, plans to increase the country's installed electricity capacity, increase the cement production capacity (now aided by the opening of a new gypsum plant), build industrial development centers, and rehabilitate the country's infrastructure (including ports, railways, and roads), are all likely to attract foreign direct investment in the mineral sector and increase interest in nonfuel mineral prospecting.

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TABLE 1  
ANGOLA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

Commodity		2005	2006	2007	2008	2009 <sup>e</sup>
<b>INDUSTRIAL MINERALS</b>						
Cement:						
Hydraulic	thousand metric tons	1,315 <sup>3</sup>	1,373 <sup>3</sup>	1,400	1,780	1,800
Clinker	do.	500	500	500	500	500
Diamond <sup>4,5</sup>	thousand carats	7,079 <sup>3</sup>	9,175 <sup>3</sup>	9,702 <sup>3</sup>	8,907 <sup>3</sup>	7,000
Granite	cubic meters	15,000	35,000 <sup>3</sup>	46,000 <sup>3</sup>	50,000	50,000
Gypsum	metric tons	--	--	--	--	120,000
Marble	cubic meters	100	100	100	100	100
Salt	metric tons	30,000	35,000 <sup>3</sup>	35,000	35,000	35,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Petroleum:						
Crude	thousand 42-gallon barrels	456,250 <sup>3</sup>	513,560 <sup>3</sup>	628,900 <sup>3</sup>	684,375 <sup>3</sup>	694,000
Refinery products <sup>6</sup>	do.	14,000	12,600	13,000	13,000	15,000

do. Ditto. -- Zero.

<sup>1</sup>Estimated data are rounded to no more than three significant digits.

<sup>2</sup>Table includes data available through May 31, 2010.

<sup>3</sup>Reported figure.

<sup>4</sup>Production was approximately 90% gem quality and 10% industrial grade.

<sup>5</sup>Kimberley Process Certification Scheme.

<sup>6</sup>Includes asphalt and bitumen.

TABLE 2  
ANGOLA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Nova Cimangola S.A. (Government, 89%, and private investors, 11%)	Luanda	1,500,000; 540,000 clinker.
Do.		Companhia de Cimento do Lobito S.A. (TecnoSecil Investimentos e Participações SARL, 51%, and Government, 49%)	Lobito, Benguela Province	250,000.
Diamond	thousand carats	Sociedade Mineira de Catoca Lda. [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 32.8%; ALROSA S.A., 32.8%; Daumonty Financing Co. B.V., 18%; Odebrecht Mining Services Inc., 16.4%]	Catoca kimberlite mine, 36 kilometers south of Saurimo, Lunda Sul Province	6,500.
Do.	do.	Luó-Sociedade Mineira do Camatchia-Camagico [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), and Espirito Santo Group]	Lunda Norte Province	18.
Do.	do.	Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 51%; New Millenium Resources Ltd., 34%; Mombo Lda., 15%	Rio Lapi Mine, 45 kilometers northeast of Saurimo, Lunda Sul Province	240.
Do.	do.	Sociedade Mineira do Lucapa Ltd. (SML) [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 51%, and Sociedade Portuguesa de Empreendimentos, 49%]	Mufuto Norte alluvial mine	25.
Do.	do.	Sociedade Mineira do Lucapa Ltd. (SML) [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 51%, and Sociedade Portuguesa de Empreendimentos, 49%] LUMANHE Lda.; ITM Mining Ltd.	Calonda alluvial mine, Lucapa, Lunda Norte Province	27.
Do.	do.	Associação em Participação Chitotolo [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 45%; ITM Mining Ltd., 40%; LUMANHE Lda., 15%]	Chitotolo alluvial mine, 95 kilometers southeast of Dundo	28.
Do.	do.	Sociedade Mineira do Cuango [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 41%; ITM Mining Ltd., 38%; LUMANHE Lda., 21%]	Cuango alluvial mine, Cuango valley, Lunda Norte Province	31.

See footnotes at end of table.

TABLE 2—Continued  
ANGOLA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Diamond— Continued	thousand carats	Trans Hex Group Ltd., 35%, and Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 40%	Fucauma Mine, northeastern Angola	120.
Do.	do.	Trans Hex Group Ltd., 32%, and Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 40%	Luarica Mine, northeastern Angola	90.
Do.	do.	Sociedade de Desenvolvimento Mineiro de Angola S.A.R.L. (SDM) [Empresa Nacional de Diamantes de Angola E.P. (ENDIAMA), 50%, and Odebrecht Mining Services Inc., 50%]	Luzamba alluvial mine, Cuango valley, Lunda Norte Province	70.
Gypsum	thousand metric tons	Fábrica de Gesso do Sumbe	Gypsum plant, city of Sumbe, Cuanza Sul Province	156.
Petroleum	thousand 42-gallon barrels per day	Sociedade Nacional de Combustíveis de Angola (Sonangol), 41%; Chevron Corp., 39.2%; Total S.A., 10%; Eni S.p.A., 9.8%	Block 0, offshore Cabinda	340.
Do.	do.	Eni S.p.A., 50%; Total S.A., 25%; Galp Energía, 10%; Ina-Industrija Nafta, 7.5%	Block 1, offshore	NA.
Do.	do.	Tullow Oil plc., 50%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; Prodoil SARL, 20%; Force Petroleum, 10%	Block 1/06, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 70%, and Sociedade Petrolífera Angolana, 30%	Block 2/05, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 52.5%; Petróleo Brasileiro S.A., 27.5%; Chevron Corp., 20%	Block 2/85, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 100%	Block 3, Canuka field, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 90%, and Sociedade Petrolífera Angolana, 15%	Block 3/05, Bufalo, Impala, Impala SE Pacassa, and Palanca fields, offshore	NA.
Do.	do.	Total S.A., 50%; Eni S.p.A., 15%; AJOCO Exploration Company Ltd., 12.5%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 6.25%; Ina Industrija Nafta, 5%	Block 3/85, Cobo and Pambe fields, offshore	NA.
Do.	do.	Total S.A., 50%; Eni S.p.A., 15%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 6.25%	Block 3/91, Oombo field, offshore	NA.
Do.	do.	Canadian Natural Resources, 100%	Block 4, Kiame field, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 100%	Block 4, Kiabo field, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 50%; Statoil ASA, 20%; Angola Consulting Resources, 15%; Sociedade Petrolífera Angolana, 15%	Block 4/05, Gimboa field; offshore	60.
Do.	do.	Vaalco Energy Inc., 40%; InterOil Exploration & Production ASA, 40%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%	Block 5, offshore	NA.
Do.	do.	Petróleos Brasileiros S.A., 40%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; InterOil Exploration & Production ASA, 20%; Falcon Oil Holding Angola S.A., 10%; Initial Oil, 10%	Block 6, offshore	NA.
Do.	do.	AP Moller-Maersk A/S, 50%; Occidental Petroleum Corp., 30%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%	Block 8, offshore	NA.
Do.	do.	Chevron Corp., 31%; Eni S.p.A., 20%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; Total S.A., 20%; Galp Energía, 9%	Block 14, offshore	100.

See footnotes at end of table.



TABLE 2—Continued  
ANGOLA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum— Continued	thousand 42-gallon barrels per day	Exxon Mobil Corp., 40%; BP p.l.c., 26.67%; Eni S.p.A., 20%; Statoil ASA, 13.33%	Block 15, offshore	700.
Do.	do.	Eni S.p.A., 35%; Sonangol-Sinopec International, 20%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 15%; Total S.A., 15%; Falcon Oil Holding Angola S.A., 5%; Petróleo Brasileiro S.A., 5%; Statoil ASA, 5%	Block 15/06, offshore	NA.
Do.	do.	AP Moller-Maersk A/S, 50%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; Devon Energy Corp., 15%; Odebretch S.A., 15%	Block 16, offshore	NA.
Do.	do.	Total S.A., 40%; Statoil ASA, 23.33%; Exxon Mobil Corp., 20%; BP p.l.c., 16.67%	Block 17, offshore	700.
Do.	do.	Total S.A., 30%; Sociedade Nacional de Combustíveis de Angola (Sonangol) 30%; Sonangol-Sinopec International, 27.5%; Angola Consulting Resources, 5%; Falcon Oil Holding Angola S.A., 5%; Partex (Angola) Corp., 2.5%	Block 17/06, offshore	NA.
Do.	do.	BP p.l.c., 50%, and Sonangol-Sinopec International, 50%	Block 18, offshore	240.
Do.	do.	China Petroleum and Chemical Corp. (Sinopec), 40%, Petróleo Brasileiro S.A., 30%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; Falcon Oil Holding Angola S.A., 5%; Gema Group Angola, 5%	Block 18/06, offshore	NA.
Do.	do.	AP Moller-Maersk A/S, 50%; Occidental Petroleum Corp., 30%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%	Block 23, offshore	NA.
Do.	do.	Petróleo Brasileiro S.A., 80%, and Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%	Block 26, offshore	NA.
Do.	do.	BP p.l.c., 26.67%; Exxon Mobil Corp., 25%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; Statoil ASA, 13.33%; Marathon Oil Corp., 10%; Total S.A., 5%	Block 31, offshore	150.
Do.	do.	Total S.A., 30%; Marathon Oil Corp., 30%; Sociedade de Combustíveis de Angola (Sonangol), 20%; Exxon Mobil Corp., 15%; Galp Energia, 5%	Block 32, offshore	NA.
Do.	do.	Exxon Mobil Corp., 45%, Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%; Total S.A., 15%; Falcon Oil Holding Angola S.A., 10%; Galp Energia, 5%; Naphtha-Israel Petroleum Corp. Ltd., 5%	Block 33, offshore	NA.
Do.	do.	Statoil ASA, 50%; Petróleo Brasileiro S.A., 30%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%	Block 34, offshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 51%; Soco Cabinda Lda., 17%; Teikoku Oil Co., 17%; Angola Consulting Resources, 15%	Cabinda North, onshore	NA.
Do.	do.	Roc Oil Co. Ltd., 60%; Force Petroleum Group Ltd., 20%; Sociedade Nacional de Combustíveis de Angola (Sonangol), 20%	Cabinda South, onshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 100%	Area A (Kwanza), onshore	NA.
Do.	do.	Sociedade Nacional de Combustíveis de Angola (Sonangol), 83.6%, and Chevron Corp., 16.4%	Area B (Soyo), onshore	NA.
Petroleum refinery products	do.	Fina Petróleos de Angola (Total S.A., 64.1%, and Government, 34%)	Refinery	14,600.
Steel		Chung Fong Holding Co., 51%, and Government, 49%	Relaunching of steel plant (under development)	36,500.
Do.		Grupo Ferpinta	Two pipe mills at Viana, 30 kilometers east of Luanda	6,000

Do., do. Ditto. NA Not available