



# 2008 Minerals Yearbook

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## NIGERIA

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# THE MINERAL INDUSTRY OF NIGERIA

By Philip M. Mobbs

As Africa's leading crude oil producer, Nigeria accounted for 21% of African and about 2.7% of total world crude oil production. In 2008, crude oil output decreased by 4%. The financial effect of the decrease in Nigerian crude oil production in 2008 was offset by the increase in the prices received for crude oil. According to the Central Bank of Nigeria (2009, p. 247), the average price of Bonny Light, which is a Nigerian crude oil standard, rose to \$101.15 per barrel in 2008 compared with \$74.96 per barrel in 2007. Gross Government revenue from hydrocarbons increased to \$54.9 billion<sup>1</sup> compared with \$35.5 billion in 2007 (BP p.l.c., 2009, p. 9; Central Bank of Nigeria, 2009, p. 219).

The Federal Government holds all mineral rights and is responsible for the allocation of exploration and development licenses. The Minerals and Mining Act, 2007 and the Petroleum Act of 1969 form the legal basis for exploration and production activity in the mineral sector. In 2008, the National Gas Master Plan became effective and the National Gas Pricing Policy and Regulations was promulgated.

## Minerals in the National Economy

Nigeria has produced crude oil for the past 50 years, since the initial production from the Oloibiri field in 1958. According to provisional data compiled by the National Bureau of Statistics, crude oil and natural gas activity accounted for about 39% of the nominal Nigerian gross domestic product in 2008; solid mineral production accounted for about 0.15%. Hydrocarbons also accounted for 99% of total exports and 83% of Government revenues. In an attempt to diversify the economy, Government policy continued to emphasize that investment in the exploration for and development of solid mineral (as opposed to natural gas and oil) deposits should be a strategic goal of the Nigerian economy (Central Bank of Nigeria, 2009, p. 234).

Total official exports in 2008 were provisionally valued at about \$80.6 billion in 2008 compared with \$65 billion in 2007. The value of exported crude oil was \$74.3 billion in 2008 compared with \$58 billion in 2007. The value of natural gas exports decreased slightly in 2008 to \$5.51 billion from \$5.56 billion in 2007. According to state-owned Nigerian National Petroleum Corp. (NNPC) (2009, p. 11), the United States received 44% of the total official crude oil exports from Nigeria; India received 10%; Brazil, about 7%; Spain, 5%; and France, about 5%. Theft from crude oil and refined petroleum product pipelines was estimated to have dropped to 14,000 barrels per day (bbl/d) in 2008 from 80,000 bbl/d in 2007. Much of the stolen oil was illegally exported (Quinlan, 2008; Walker, 2008; Central Bank of Nigeria, 2009, p. 250, 262).

<sup>1</sup>Where necessary, values have been converted from Nigerian naira (₦) to U.S. dollars (US\$) at the average rates of ₦119.07=US\$1.00 for 2008 and ₦125.72=US\$1.00 for 2007.

## Production

In 2008, aluminum production resumed at the Aluminum Smelter Co. of Nigeria, Ltd. (ALSCON), which had ceased operations in 1999. Kaduna Refinery and Petrochemicals Co. Ltd. and Warri Refinery and Petrochemicals Co. Ltd. also resumed operations in 2008, which resulted in the significant increase in the output of refined petroleum products. Crushed stone (aggregate), gold, lead-zinc ore, limestone, and sand output also increased in 2008. The continued decrease in crude oil production was attributed to the civil disturbances in the Niger Delta region, criminal violence directed at the international oil company facilities and personnel, the decline in international demand, and repeated vandalism of domestic crude oil, natural gas, and petroleum products pipelines. Gypsum output was estimated to have decreased significantly in 2008 (table 1; Central Bank of Nigeria, 2009, p. 105; Nigerian National Petroleum Corp., 2009, p. x, xiii).

## Structure of the Mineral Industry

The Ministry of Mines and Steel Development manages much of the solid minerals sector. The Federal Ministry of Commerce and the Federal Ministry of Industry were merged in 2007 to form the Federal Ministry of Commerce and Industry, which manages the cement sector. The Federal Ministry of Energy is responsible for the oversight of the natural gas, petroleum, and power sectors. NNPC was the major partner in natural gas and petroleum production joint ventures with subsidiaries of large international oil companies, such as Chevron Corp. and Exxon Mobil Corp. of the United States, Eni SpA of Italy, Royal Dutch Shell plc of the United Kingdom, and Total S.A. of France. Crude oil also was produced under production-sharing contracts, service contracts, and by sole risk operators (primarily independent domestic companies). Most Nigerian natural gas output was produced as a coproduct of crude oil production.

## Commodity Review

### Metals

**Aluminum.**—United Company RUSAL of Russia, which held 77.5% interest in ALSCON, continued to refurbish the ALSCON smelter, which had closed in 1999. In February 2008, production resumed with about 40 reduction cells of the 432 cells online. The ALSCON smelter was expected to reach full production capacity by 2010 (Mukumbira, 2008).

**Iron and Steel.**—In April, the Government cancelled the 10-year concession agreement to manage Ajaokuta Steel Co. Ltd. and National Iron Ore Mining Co. that had been awarded in 2004 to Global Steel Holdings Ltd. (formerly known as Global Infrastructure Holdings Ltd.). Global Steel subsequently filed the issue with the International Court of Arbitration. Global

Steel also was under investigation for its operation of Delta Steel Co. Ltd. (Guardian Newspapers Ltd., 2008).

Construction of Western Metal Products Company Ltd.'s 750,000-metric-ton-per-year (t/yr)-capacity rolling mill at Ibafeon, Ogun State, was underway, and Designed Stainless Product Ltd. started construction of a stainless steel mill in Abuja. MINL Ltd., which produced aluminum and galvanized steel sheets, expected that its 200,000-t/yr-capacity concrete-reinforcing bar (rebar) rolling mill in Ota, Ogun State, would be producing rebar in 2009. BSS Steel Rolling Mill Ltd. proposed to build a 300,000-t/yr-capacity rolling mill in Abese, Ogun State (Alli, 2008; Metal Bulletin, 2008; This Day Online, 2008).

### **Mineral Fuels**

**Natural Gas and Petroleum.**—In 2008, the Oil and Gas Sector Reform Implementation Committee submitted a report that reviewed Nigerian hydrocarbon policies and suggested regulatory and structural reforms. The report formed the basis for the Petroleum Industry Bill, which was expected to be introduced to the National Assembly in 2009.

In 2008, the NNPC joint venture operated by Mobil Producing Nigeria Unlimited again was Nigeria's leading crude oil producer, followed by the NNPC joint venture that was operated by Shell Petroleum Development Co. of Nigeria Ltd.; the NNPC joint venture that was operated by Chevron, and the NNPC joint venture that was operated by Total S.A.'s subsidiary Elf Petroleum Nigeria Ltd. Many of the onshore operations in the western Niger River delta region remained suspended in 2008 because of the ongoing civil unrest. Because of the attacks on offshore and onshore facilities, shut-in (not producing) crude oil production capacity in 2008 was estimated to have ranged from 700,000 bbl/d to 1.1 million barrels per day. Reported incidents of pipeline sabotage in Nigeria, however, decreased in 2008 to 2,285 incidents, which was down from 3,224 in 2007 (Ebiri and others, 2008; Nigerian National Petroleum Corp., 2009, p. 32; Platts.com, 2009).

In 2008, natural gas began to flow from Nigeria through the West African gas pipeline to Ghana. Also in 2008, crude oil production was initiated from the 100,000-bbl/d Chevron-operated offshore Agbami field. Output was expected to reach 250,000 bbl/d in 2009. Afren plc started production of 3,000 bbl/d from the offshore Okoru Setu field. The production capacity of the field was expected to reach 15,000 bbl/d. The joint venture of Mobil and NNPC started production from the East Areas Natural Gas Liquids II project. Located about 28 kilometers offshore, the project was expected to produce 50,000 bbl/d of natural gas liquids when full production levels were reached (Afren plc, 2008; Exxon Mobil Corp., 2008; Petroleum Economist, 2008b).

Operations at the Warri refinery resumed in February and at the Kaduna refinery in March; these refineries had operated only intermittently since early 2006 owing to crude-oil-supply pipeline damages, which resulted in a lack of oil to refine. The Government approved the construction of new crude oil refineries at Eket, Akwa Ibom State, and in Lagos State. Despite the Government's revocation in 2007 of 18 provisional licenses to build privately owned crude oil refineries because of the

lack of progress on the projects, several planned or proposed refinery projects remained active. These included the projects of Amakpe International Refineries Nigeria Ltd. in Akwa Ibom State, Antonio Oil Company Ltd. in Ogun State, Batun Oil and Gas Ltd. in Lagos State, Orient Petroleum Resources Plc. in Anambra State, National Independent Petroleum Co. at a site to be determined, and Tonwei Refinery Ltd. in Baylesa State.

In May, Mobil and Shell were notified that the Government considered that the companies owed the Government an additional \$1.91 billion under the production-sharing agreements for production from (respectively) the Erha and the Bonga fields. At yearend, the companies and NNPC continued talks on the contracts that covered operations in these fields (Petroleum Economist, 2008a).

### **Outlook**

In 2008, the Government's action to diversify the mineral sector included the updated Mining Law, the ongoing reorganization of state-owned companies in the mineral sector, and efforts to attract domestic and foreign investors to explore for and to exploit economic mineral deposits. The ongoing civil unrest in southern Nigeria, however, is expected to continue to adversely affect international investor interest in the Nigerian solid minerals sector.

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

(Metric tons unless otherwise specified)

| Commodity <sup>3</sup>                         | 2004                 | 2005                 | 2006                 | 2007                 | 2008                 |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>METALS</b>                                  |                      |                      |                      |                      |                      |
| Aluminum                                       | --                   | --                   | --                   | --                   | 20,000               |
| Gold   | 30                   | 30                   | 50                   | 180 <sup>r</sup>     | 200                  |
| Iron ore, gross weight                         | --                   | 60                   | 88 <sup>4</sup>      | 58 <sup>4</sup>      | 62 <sup>4</sup>      |
| Lead:  |                      |                      |                      |                      |                      |
| Lead-zinc ore                                  | 200                  | --                   | 492,000 <sup>4</sup> | 582,000 <sup>4</sup> | 644,000 <sup>4</sup> |
| Metal, refined                                 | 5,000                | 5,000                | 5,000                | 5,000                | 5,000                |
| Niobium (columbium) and tantalum concentrates: |                      |                      |                      |                      |                      |
| Gross weight                                   | 100                  | 99                   | 110                  | 180                  | 194 <sup>4</sup>     |
| Niobium (columbium) content                    | 40                   | 35                   | 40                   | 70                   | 75                   |
| Steel  | 40,000               | 100,000              | 500,000              | 500,000              | 500,000              |
| Tin:   |                      |                      |                      |                      |                      |
| Mine output, cassiterite concentrate:          |                      |                      |                      |                      |                      |
| Gross weight                                   | 1,300                | 1,700                | 1,818 <sup>4</sup>   | 229 <sup>4</sup>     | 240 <sup>4</sup>     |
| Sn content                                     | 1,000                | 1,300                | 1,400                | 180                  | 185                  |
| Metal, smelter                                 | 25                   | 25                   | --                   | --                   | --                   |
| <b>INDUSTRIAL MINERALS</b>                     |                      |                      |                      |                      |                      |
| Barite <sup>5</sup>                            | 6,000                | 6,000                | 6,300                | 5,000                | 5,000                |
| Cement, hydraulic                              | 2,300                | 2,700                | 3,300                | 4,700                | 5,000                |
| Clays:   |                      |                      |                      |                      |                      |
| Kaolin   | 58,000               | 93,000               | 100,000              | 100,000              | 100,000              |
| Unspecified                                    | 150,000              | 150,000              | 160,000              | 234,000 <sup>r</sup> | 251,000 <sup>4</sup> |
| Feldspar                                       | 1,000                | 1,100                | 1,700 <sup>r</sup>   | 1,700 <sup>r</sup>   | 1,700                |
| Gypsum   | 160,000              | 150,000              | 169,000              | 579,000 <sup>4</sup> | 300,000              |
| Sand and stone:                                |                      |                      |                      |                      |                      |
| Granite  | 2,000                | 2,000                | --                   | --                   | --                   |
| Limestone                                      | 2,100                | 1,200                | 1,500 <sup>r,e</sup> | 3,300 <sup>4</sup>   | 3,960 <sup>4</sup>   |
| Marble   | 150                  | 149                  | 200                  | 200                  | 200                  |
| Sand   | 905                  | 900                  | 941                  | 1,723 <sup>4</sup>   | 1,960 <sup>4</sup>   |
| Stone, crushed (aggregate)                     | 2,206 <sup>4</sup>   | 2,000                | 1,636 <sup>4</sup>   | 2,924 <sup>4</sup>   | 3,583 <sup>4</sup>   |
| Shale  | 1,200                | 1,200                | 1,300                | 83                   | 91 <sup>4</sup>      |
| Topaz  | 10                   | --                   | 10                   | 10                   | 10                   |
| <b>MINERAL FUELS AND RELATED MATERIALS</b>     |                      |                      |                      |                      |                      |
| Coal, bituminous                               | --                   | 8,000                | 530,000              | 530,000              | 500,000              |
| Natural gas:                                   |                      |                      |                      |                      |                      |
| Gross  | 57,747 <sup>4</sup>  | 57,369 <sup>4</sup>  | 57,754 <sup>4</sup>  | 68,404 <sup>4</sup>  | 66,632 <sup>4</sup>  |
| Dry  | 34,411 <sup>4</sup>  | 34,744 <sup>4</sup>  | 39,000               | 46,046 <sup>4</sup>  | 46,759 <sup>4</sup>  |
| Petroleum:                                     |                      |                      |                      |                      |                      |
| Crude  | 900,400 <sup>4</sup> | 923,500 <sup>4</sup> | 869,197 <sup>4</sup> | 803,000 <sup>4</sup> | 768,800 <sup>4</sup> |
| Refinery products:                             |                      |                      |                      |                      |                      |
| Liquefied petroleum gases                      | 20 <sup>4</sup>      | 700                  | NA                   | 16 <sup>4</sup>      | 300 <sup>4</sup>     |
| Gasoline                                       | 4,600 <sup>4</sup>   | 14,800               | 8,500                | 2,450 <sup>4</sup>   | 5,958 <sup>4</sup>   |
| Kerosene                                       | 4,900 <sup>4</sup>   | 10,100               | 6,100                | 2,550 <sup>4</sup>   | 5,179 <sup>4</sup>   |
| Distillate fuel oil                            | 8,800 <sup>4</sup>   | 15,800               | 9,400                | 4,645 <sup>4</sup>   | 8,698 <sup>4</sup>   |
| Residual fuel oil                              | 12,400 <sup>4</sup>  | 19,200               | 14,400               | 6,670 <sup>4</sup>   | 9,629 <sup>4</sup>   |
| Unspecified                                    | 3,400 <sup>4</sup>   | 4,300                | 1,000                | 1,681 <sup>4</sup>   | 3,383 <sup>4</sup>   |
| Total  | 34,100 <sup>4</sup>  | 65,000               | 39,400               | 18,012 <sup>4</sup>  | 33,147 <sup>4</sup>  |

<sup>r</sup>Revised. do. Ditto. NA Not available. -- Zero.

<sup>1</sup>Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Table includes data available through January 12, 2010.

<sup>3</sup>In addition to the commodities listed, amethyst, aquamarine, bitumen, copper (secondary), diamond, emerald, garnet, ilmenite, lime, monazite, phosphate rock, rolled-steel products, ruby, rutile, sapphire, soda ash, talc, tourmaline, tungsten, and zircon are produced, but available information is inadequate to estimate output.

<sup>4</sup>Reported figure.

<sup>5</sup>Considerably more barite is produced but it is considered to be commercially unusable.

TABLE 2  
NIGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

| Commodity                        |                           | Major operating companies and major equity owners  | Location of main facilities                | Annual capacity        |
|----------------------------------|---------------------------|--|--|------------------------|
| Aluminum                         |                           | Aluminum Smelter Co. of Nigeria, Ltd. (ALSCON) (United Company RUSAL, 77.5%)   | Smelter at Ikot Abasi                      | 193,000 <sup>1</sup>   |
| Cement                           |                           | Obajana Cement Plc (Dangote Group)   | Lines 1 and 2 at Obajana                   | 5,000,000 <sup>2</sup> |
| Do.                              |                           | United Cement Co. of Nigeria (Egyptian Cement Co., 70%, and Flour Mills of Nigeria Ltd., 30%)  | Calbar cement plant, Mfamosing             | 2,500,000 <sup>3</sup> |
| Do.                              |                           | West Africa Portland Cement Co. Plc (Lafarge S.A., 59.95%)   | Ewekoro                                    | 1,320,000              |
| Do.                              |                           | Ashakacem Plc (Lafarge S.A., 50.11%)   | Ashaka                                     | 900,000                |
| Do.                              |                           | Benue Cement Co. Plc (Dangote Group)   | Benue State                                | 900,000 <sup>4</sup>   |
| Do.                              |                           | West Africa Portland Cement Co. Plc (Lafarge S.A., 59.95%)   | Shagamu                                    | 600,000                |
| Do.                              |                           | Cement Co. of Northern Nigeria Plc (Damnaz Cement Company Ltd., 50.7%)   | Sokoto                                     | 500,000                |
| Do.                              |                           | Edo Cement Co. Ltd. (Damnaz Cement Company Ltd., 87%)  | Okpella                                    | 450,000                |
| Do.                              |                           | United Cement Co. of Nigeria (Egyptian Cement Co., 70%, and Flour Mills of Nigeria Ltd., 30%)  | Clinker grinding plant, Calbar             | 350,000                |
| Coal                             |                           | Kogi State government  | Ogboyoga Mine                              | NA                     |
| Copper, secondary                |                           | Sun & Sand Industries Ltd.   | Otta                                       | NA                     |
| Fertilizer:                      |                           |  |  |                        |
| Single superphosphate            |                           | Heikio Consortium Ltd.   | Kaduna                                     | 100,000 <sup>1</sup>   |
| Urea                             |                           | Notore Chemical Industries Ltd.  | Onne                                       | 600,000 <sup>1</sup>   |
| Iron and steel:                  |                           |  |  |                        |
| Iron ore                         |                           | National Iron Mining Co. Ltd. (Government, 100%)   | Itakpe                                     | 5,500                  |
| Steel:                           |                           |  |  |                        |
| Steel, crude                     |                           | Ajaokuta Steel Co. Ltd. (Government, 100%)   | Blast furnace at Ajaokuta                  | 1,350,000 <sup>1</sup> |
| Do.                              |                           | Delta Steel Co. Ltd. (Global Steel Holdings Ltd.)  | Electric arc furnaces at Aladja            | 1,000,000              |
| Do.                              |                           | African Steel Mills Ltd. (Liberty Group)   | Electric arc furnace at Ikorodu            | 170,000                |
| Do.                              |                           | Federated Steel Mills Ltd.   | Electric arc furnace at Ikeja              | 140,000                |
| Do.                              |                           | Nigerian Spanish Engineering Co.   | Electric arc furnace at Kano               | 100,000                |
| Do.                              |                           | Sankyo Steel Mill Company Ltd.   | Electric arc furnace at Ikeja              | 80,000                 |
| Do.                              |                           | Continental Iron and Steel Co.   | do.  | 60,000                 |
| Do.                              |                           | Universal Steel Co.  | do.  | 50,000                 |
| Rolling mills                    |                           | Delta Steel Co. Ltd. (Global Steel Holdings Ltd.)  | Aladja                                     | 300,000                |
| Do.                              |                           | Jos Steel Rolling Co. Ltd. (Zuma Steel West Africa Ltd.)   | Jos rolling mill                           | 210,000 <sup>1</sup>   |
| Do.                              |                           | Katsina Steel Rolling Co. Ltd. (Dana Steel Ltd.)   | Katsina rolling mill                       | 207,000 <sup>1</sup>   |
| Do.                              |                           | Oshogbo Steel Rolling Co. Ltd. (Kura Holdings Ltd.)  | Oshogbo rolling mill                       | 210,000 <sup>1</sup>   |
| Do.                              |                           | Ajaokuta Steel Co. Ltd. (Government, 100%)   | Ajaokuta                                   | 130,000                |
| Do.                              |                           | African Steel Mills Ltd. (Liberty Group)   | Rolling mill at Ikorodu                    | 100,000                |
| Do.                              |                           | Sunflag Steel (Nigeria) Ltd.   | Rolling mill at Lagos                      | 30,000                 |
| Natural gas, liquefied           | million metric tons       | Nigeria Liquefied Natural Gas Ltd. [Nigerian National Petroleum Corp. (NNPC), 49%; Shell Gas B.V., 25.6%; Total LNG Nigeria Ltd., 15%; ENI International (N.A.) S.a.r.l., 10.4%] | Trains 1 through 5 at Finima, Bonny Island | 17                     |
| Do.                              | do.                       | do.  | Train 6 at Finima, Bonny Island            | 4 <sup>3</sup>         |
| Do.                              | do.                       | Brass LNG Ltd. [Nigerian National Petroleum Corp. (NNPC), 49%; Brass Holdings Co. Ltd., 17%; ENI International (N.A.) S.a.r.l., 17%; Phillips (Brass) Ltd., 17%]                 | Trains 1 and 2 on Brass Island             | 10 <sup>3</sup>        |
| Niobium (columbium) and tantalum |                           | Artisanal miners   | Jos region                                 | NA                     |
| Petroleum:                       |                           |  |  |                        |
| Crude                            | million 42-gallon barrels | Produced under various joint ventures with Nigerian National Petroleum Corp. (NNPC), production-sharing contracts, service contracts, and sole risk operations                   | Niger Delta and offshore                   | 980                    |
| Refined petroleum products       | do.                       | Port Harcourt Refining Co. Ltd. (Government, 100%)   | New Port Harcourt refinery                 | 55                     |
| Do.                              | do.                       | do.  | Old Port Harcourt refinery                 | 22                     |
| Do.                              | do.                       | Warri Refinery and Petrochemicals Co. Ltd. (Government, 100%)  | Warri refinery                             | 43                     |
| Do.                              | do.                       | Kaduna Refinery and Petrochemicals Co. Ltd. (Government, 100%)   | Kaduna refinery                            | 38                     |
| Tin                              |                           | Artisanal miners   | Mines at Dutse Nkura                       | 30                     |
| Do.                              |                           | do.  | Mines at Gurum, near Jos                   | 30                     |

Do., do. Ditto. NA Not available.

<sup>1</sup>Under rehabilitation.

<sup>2</sup>Construction of Lines 3 and 4 with an additional annual capacity of 5 million metric tons was suspended at yearend.

<sup>3</sup>Under construction.

<sup>4</sup>Expansion to 2.7 million metric tons per year is underway.