



# 2012 Minerals Yearbook

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**NIGERIA [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF NIGERIA

By Philip M. Mobbs

As Africa's leading crude oil producer, Nigeria accounted for about 26% of African and about 2.8% of total world crude oil production in 2012. The state-owned Nigerian National Petroleum Corp. (NNPC) reported that crude oil output in 2012 decreased by about 1.6% compared with that of 2011 (BP p.l.c., 2013, p. 10; Nigerian National Petroleum Corp., 2013, p. 24).

The Federal Government holds all mineral rights and is responsible for issuing exploration and development licenses. The Minerals and Mining Act, 2007; the Minerals and Mining Regulations, 2011; and the Petroleum Act of 1969 form the legal basis for exploration and production activity in the mineral sector. In late 2011, a study of the Nigerian mining sector was prepared for the Nigeria Extractive Industries Transparency Initiative by the Geological Survey of Denmark and Greenland, the Bureau of Minerals and Petroleum of Greenland, Meyetty Nigeria Ltd., and Minre Associates of Nigeria. Nigeria also had a large ferrous and nonferrous metal recycling sector (Nigeria Extractive Industries Transparency Initiative, 2011, p. 9–10).

## Minerals in the National Economy

The Nigerian hydrocarbon sector, which included the production of crude oil, natural gas, and refined petroleum products, accounted for about 70% of Government revenue. Exports of natural gas and petroleum accounted for about 96% of total Nigerian exports (International Monetary Fund, 2013, p. 28–29).

## Production

In addition to crude and refined hydrocarbons, Nigeria produced a small suite of minerals, which included barite, coal, gemstones, gold, iron ore, niobium, salt, sand, various types of stone, tantalum, and tin, and some mineral-based commodities, such as aluminum, cement, nitrogenous fertilizers, and steel. Production of aluminum, cement, limestone, nitrogen (ammonia), shale, and steel were estimated to have increased significantly in 2012. Lead-zinc ore and the volume of refined petroleum products were estimated to have decreased significantly. A slight decrease in the volume of crude oil produced in Nigeria was reported (table 1).

## Structure of the Mineral Industry

The Ministry of Mines and Steel Development (MMSD) manages much of the solid minerals sector. The Nigerian Mining Cadastre Office, which is a department of the MMSD, processes mineral title applications, including exploration licenses, mining licenses, quarrying licenses, and small-scale mining licenses. The Federal Ministry of Petroleum Resources is responsible for the oversight of the natural gas and petroleum sectors. NNPC was the major partner in natural gas and petroleum production joint ventures, which were operated by subsidiaries of large international oil companies or domestic oil companies. 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 associated with crude oil production.

## Commodity Review

### Metals

**Aluminum.**—In late 2011, the Nigerian Senate proposed to revoke the sales of 12 formerly state-owned companies by the Bureau of Public Enterprises (BPE) that had taken place in 2007; a parliamentary committee subsequently initiated an investigation of the sales. Included in this group of privatized companies was Aluminum Smelter Co. of Nigeria, Ltd. (ALSCON), of which a majority of equity shares had been sold to United Company RUSAL of Russia.

The repeated vandalization of the pipeline that supplied natural gas to the ALSCON powerplant, the subsequent abrupt loss of power and associated damage to the aluminum potlines, and protests and work stoppages in 2011 and 2012 concerning a new collective bargaining agreement for workers and severance pay owed by the Government to staff that were laid off prior to the privatization continued to affect the rehabilitation of the ALSCON production facilities adversely. In 2012, ALSCON operated at about 27% of nameplate capacity (Effiong, 2011; Odiogor, 2011; Utip, 2012; United Company RUSAL, 2013, p. 30).

In July, the Nigerian Supreme Court ruled that the Government's sale of 77.5% equity interest in ALSCON to RUSAL in 2007 was ill-advised because Bancorp Financial Investment Group (BFIG) of the United States had acquired a valid (although disputed) contract to acquire ALSCON in 2004. The BPE was ordered to draw up a share purchase agreement for ALSCON with BFIG. RUSAL noted that the judgment was against the BPE and that it did not appear to directly address RUSAL's ownership of ALSCON (Ige, 2005; Fedorinova, 2012).

**Gold.**—In Nigeria, gold was mined primarily by small-scale artisanal operations. In 2012, Australian Mines Ltd. of Australia continued exploration of the Kasele, the Tegin (formerly the Kagara), and the Yargarma gold prospects. A seven-hole, 1,054-meter diamond drill program was completed at Yargarma. Boab Mining Nigeria Ltd., which was a subsidiary of Quest Minerals Ltd. of Australia, continued early-stage exploration on its gold projects. EcoPhoenix Ltd. of Nigeria also was exploring for gold (Australian Mines Ltd., 2013, p. 2).

A dispute concerning the joint venture of Segilola Gold Ltd., which was a subsidiary of RTG Mining Inc. of Australia (formerly Ratel Group Ltd. of the British Virgin Islands), and Tropical Mines Ltd. of Nigeria, was brought before the Federal High Court of Nigeria. The legal dispute limited exploration activity on the joint venture's Segilola gold project in 2012 (RTG Mining Inc., 2013, p. 3–4).

**Iron and Steel.**—In 2012, the Government announced plans to increase domestic steel production to 12.2 million metric tons per year (Mt/yr) by 2020. In recent years, crude steel had been produced in Nigeria by small minimills; the Government's crude steel production facilities [Ajaokuta Steel Company Ltd. (ASC) and Delta Steel Company Ltd.] had remained inactive. Included in the campaign to increase domestic steel output was a proposal to complete the steel plant at Ajaokuta, where initial construction had begun in 1980 (Ofikhenua, 2012).

In 2004, a management contract for the ASC facility held by a consortium headed by Solgas Energy Ltd. of the United States was terminated by the Government and a 10-year contract to manage the completion and rehabilitation of the ASC facility was awarded to Global Infrastructure Nigeria Ltd. (also known as Global Infrastructure Holdings Ltd. and Global Steel Holdings Ltd.). In 2008, the Global Infrastructure contract was terminated by the Government and an Interim Management Committee was installed to oversee the ASC project. Repeated complaints about the lack of activity at ASC, owing in part to limited Government funding, resulted in the appointment of a sole administrator in 2012, who was to supervise the rehabilitation of the ASC facility, and the abolishment of the Interim Management Committee (Oduniyi, 2005; Salaudeen, 2012; Ugeh, 2012).

The state-owned Asset Management Company of Nigeria (AMCON) took control of Delta Steel Company Ltd. in 2012 after Global Infrastructure failed to repay bank loans of about \$190 million.<sup>1</sup> Global Infrastructure had acquired Delta Steel in 2006; a committee of the Senate subsequently proposed to revoke Global Infrastructure's ownership of Delta Steel owing to discrepancies in the privatization process (Akogun, 2011; Akanbi, 2012).

**Iron Ore.**—In 2012, Energo Ltd. of Australia acquired the remaining 25% equity interest in KCM Nigeria Ltd. from Bedford CP Nominees Proprietary Ltd. of Australia. KCM Nigeria completed 557 reverse-circulation drill holes and 11 diamond drill holes on the Agbaja iron ore project and planned to continue resource-definition drilling in 2013. The project was located about 60 kilometers north of the railroad that connected the Ajaokuta steel complex to the Port of Warri. At yearend, Energo was renamed Kogi Iron Ltd. (Kogi Iron Ltd., 2013).

In 2005, Global Infrastructure had acquired a contract to manage National Iron Ore Mining Co. (NIOMCO), but the concession was terminated in 2008 when the Government installed an Interim Management Committee to protect the assets of NIOMCO. In 2012, a sole administrator was appointed to supervise the rehabilitation of the iron ore mine and beneficiation operation at Itakpe, and the Interim Management Committee was abolished (Imam, 2013).

### **Industrial Minerals**

**Nitrogen.**—In early 2012, Notore Chemical Industries Ltd. completed the initial renovation of its fertilizer plant at Onne

and production reached nameplate capacity of 500,000 metric tons per year (t/yr) of urea and 300,000 t/yr of ammonia. Notore, which had restarted operations at the plant in 2009, proposed to address some of the plant's manufacturing process restrictions in late 2013. The debottlenecking was expected to allow an increase in the plant's capacity to 750,000 t/yr of urea and 430,000 t/yr of ammonia. Notore also entered into a joint-venture agreement with Mitsubishi Corp. of Japan to build a second plant, which would be located adjacent to the existing plant, by 2016. The new facility was expected to have a production capacity of 1 Mt/yr of urea and about 570,000 t/yr of ammonia (Notore Chemical Industries Ltd., 2012).

### **Mineral Fuels**

**Petroleum.**—International oil companies continued to dispose of some of their interest in exploration and hydrocarbon production assets in Nigeria in 2012, and the Government strongly encouraged private domestic companies to enter the upstream hydrocarbon sector and acquire the assets. ConocoPhillips of the United States agreed to sell its Nigerian assets to Oando PLC of Nigeria for \$1.79 billion. The transaction was expected to close in 2013. Shell Petroleum Development Company of Nigeria Ltd. (SPDC), which was a subsidiary of Royal Dutch Shell plc of the United Kingdom, continued its onshore property divestment program with the sale to domestic companies of 30% interest in oil mining leases 30, 34, and 40. SPDC's joint-venture partners Total E&P Nigeria Ltd. (formerly 10% equity interest) and Nigerian Agip Oil Co. (formerly 5% interest) also sold their respective interests in the three leases (ConocoPhillips, 2012; Royal Dutch Shell plc, 2012a–c).

In 2012, companies affiliated with Exxon Mobil Corp. of the United States, which included Esso Exploration and Production Nigeria Ltd. and the Mobil Producing Nigeria Unlimited joint venture with NNPC, accounted for about 37% of Nigerian crude oil production. Associated companies of Royal Dutch Shell, which included Shell Nigeria Exploration and Production Co. and the SPDC joint venture with NNPC, accounted for 30% of crude oil production. Affiliated companies of Chevron Corp. of the United States, which included the Chevron Nigeria Ltd. (CNL) and NNPC joint ventures and Star Deep Water Petroleum Ltd., accounted for 14% of crude oil production (Nigerian National Petroleum Corp., 2013, p. 3).

Niger Delta Petroleum Resources Ltd., which was a subsidiary of Niger Delta Exploration and Production PLC of Nigeria, increased the output of diesel fuel from its topping plant to about 97,500 barrels in 2012 from about 31,700 barrels in 2011. The diesel distillation unit started operations in 2010 (Niger Delta Exploration and Production PLC, 2013, p. 26).

Reported incidents of crude oil and refined petroleum product pipeline vandalism decreased slightly to 2,230 incidents in 2012 from 2,768 incidents in 2011. Reported pipeline ruptures increased to 26 occurrences in 2012 from 19 in 2011 (Nigerian National Petroleum Corp., 2013, p. 61).

American imports of Nigerian oil continued to decrease. In 2012, 161.4 million barrels (Mbbbl) of Nigerian crude oil were exported to the United States compared with 298.7 Mbbbl

<sup>1</sup>Where necessary, values have been converted from Nigerian naira (NGN) to U.S. dollars (US\$) at the average rates of NGN159=US\$1.00 for 2012.

in 2011 and 413.9 Mbbl in 2007. The dramatic decrease in export volumes was attributed to lower demand for imported oil owing to increased production of oil from shale formations in the United States (Lidji, 2012; U.S. Energy Information Administration, 2013).

## Outlook

The Government's ongoing promotion of the diversification of the mineral sector has interested numerous domestic and foreign mining entities in exploration of Nigerian mineral deposits. The intermittent availability of electrical power is expected to continue to affect mineral-processing and other businesses in Nigeria, many of which use their own small generators to provide electrical power for their operations. Continued legislative debate on oil industry regulatory reforms in the proposed Petroleum Industry Bill is expected to moderate foreign investors' interest in the Nigerian hydrocarbon sector until administration and legislative concerns are reconciled (Sada, 2012; International Monetary Fund, 2013, p. 56–60).

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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>	2008	2009	2010	2011	2012
<b>METALS</b>					
Aluminum	10,600	13,000	21,200	17,600	26,000
Gold kilograms	2,890	1,350 <sup>r</sup>	3,718 <sup>r,4</sup>	4,000 <sup>r</sup>	4,000
Iron ore, gross weight thousand metric tons	62 <sup>4</sup>	99 <sup>4</sup>	63 <sup>4</sup>	70 <sup>4</sup>	70
Lead-zinc ore	644,000 <sup>4</sup>	530,000	680,000	800,000	600,000
Niobium (columbium) and tantalum concentrates:					
Gross weight	335 <sup>r</sup>	331 <sup>r</sup>	281 <sup>r</sup>	311 <sup>r</sup>	310
Niobium (columbium) content	23 <sup>r</sup>	23 <sup>r</sup>	20 <sup>r</sup>	22 <sup>r</sup>	22
Tantalum content	69	68	58	64	63
Steel	500,000	100,000 <sup>r</sup>	100,000 <sup>r</sup>	100,000 <sup>r</sup>	400,000
Tin, mine output, cassiterite concentrate:					
Gross weight	240 <sup>4</sup>	510	680	740	740
Sn content	185	400	520	570	570
<b>INDUSTRIAL MINERALS</b>					
Barite <sup>5</sup>	5,000	19,400 <sup>4</sup>	19,000	19,000	20,000
Cement, hydraulic thousand metric tons	10,000	10,000	11,000	12,800 <sup>r</sup>	16,400
Clays, includes kaolin	108,000 <sup>4</sup>	154,000 <sup>4</sup>	139,000 <sup>4</sup>	155,000 <sup>4</sup>	140,000
Feldspar	1,700	1,700	1,616 <sup>r,4</sup>	1,700	1,700
Gypsum	300,000	300,000	320,000	320,000	350,000
Nitrogen, N content of ammonia	--	40,000	95,000	80,000	240,000
Sand and stone:					
Laterite thousand metric tons	3,014 <sup>4</sup>	2,740 <sup>4</sup>	2,322 <sup>4</sup>	2,573 <sup>4</sup>	2,600
Limestone do.	3,960	4,237 <sup>4</sup>	5,671 <sup>4</sup>	8,280 <sup>4</sup>	11,000
Marble do.	200	190	--	--	--
Sand, construction do.	3,552 <sup>4</sup>	1,050 <sup>4</sup>	1,254 <sup>4</sup>	1,394 <sup>4</sup>	1,400
Sand, industrial (silica) do.	26	32	30	30	30
Stone, crushed (aggregate):					
Granite do.	9,501 <sup>4</sup>	10,104 <sup>4</sup>	7,739 <sup>4</sup>	9,621 <sup>4</sup>	10,000
Marble do.	6,133 <sup>4</sup>	8,995 <sup>4</sup>	9,356 <sup>4</sup>	10,185 <sup>4</sup>	10,000
Other do.	3,583 <sup>4</sup>	3,762 <sup>4</sup>	3,673 <sup>4</sup>	4,074 <sup>4</sup>	4,000
Shale do.	9,162 <sup>4</sup>	7,235 <sup>4</sup>	6,690 <sup>4</sup>	7,452 <sup>4</sup>	9,000
Topaz kilograms	625 <sup>4</sup>	1,077 <sup>4</sup>	1,000	1,000	900
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, bituminous	38,512 <sup>4</sup>	40,612 <sup>4</sup>	45,713 <sup>4</sup>	39,213 <sup>4</sup>	40,000
Natural gas: <sup>4</sup>					
Gross million cubic meters	64,776	52,026	67,758	67,972	73,063
Marketed <sup>6</sup> do.	34,505	24,413	45,903	38,343	37,946
Petroleum:					
Crude and condensate <sup>4</sup> thousand 42-gallon barrels	768,800	780,348	896,043	866,245	852,777
Natural gas liquids do.	13,500	15,500	14,700	18,600	15,700
Refinery products:					
Liquefied petroleum gases do.	1,900	1,200	1,900	1,200	1,000
Gasoline do.	5,958 <sup>4</sup>	3,102 <sup>4</sup>	6,400	10,900	9,700
Kerosene do.	5,179 <sup>4</sup>	2,530 <sup>4</sup>	5,000	5,800	4,700
Distillate fuel oil do.	8,698 <sup>4</sup>	4,168 <sup>4</sup>	7,000	8,200	7,200
Residual fuel oil do.	9,629 <sup>4</sup>	4,060 <sup>4</sup>	6,600	9,300	6,500
Unspecified do.	3,383 <sup>4</sup>	1,617 <sup>4</sup>	3,000	6,100	4,400
Total do.	34,747 <sup>4</sup>	16,677 <sup>4</sup>	29,900	41,500	34,000

<sup>1</sup>Revised. do. Ditto. -- Zero.

<sup>2</sup>Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Table includes data available through August 30, 2013.

<sup>4</sup>In addition to the commodities listed, amethyst, aquamarine, bitumen, secondary copper, diamond, emerald, garnet, ilmenite, refined or remelted lead, lime, manganese, monazite, phosphate rock, rolled-steel products, ruby, rutile, salt, sapphire, soda ash, talc, tourmaline, tungsten, and zircon are produced, but available information is inadequate to estimate output.

<sup>5</sup>Reported figure.

<sup>6</sup>Considerably more barite is produced but it is considered to be commercially unusable.

<sup>7</sup>Total natural gas production less flared gas, gas used for fuel, gas used for gas lift, and reinjected gas.



TABLE 2  
NIGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(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, 85%)	Smelter at Ikot Abasi	96,000 <sup>1</sup>
Cement	Ashakacem Plc (Lafarge S.A., 58.61%)	Ashaka	900,000
Do.	Benue Cement Company Plc (Dangote Industries Ltd.)	Gboko	2,800,000
Do.	Cement Co. of Northern Nigeria Plc (BUA International Ltd., 50.7%)	Sokoto	500,000
Do.	Dangote Cement Works Ltd. (Dangote Industries Ltd.)	Ibese	6,000,000
Do.	Edo Cement Co. Ltd. (BUA International Ltd., 87%)	Okpella	350,000
Do.	Lafarge Cement WAPCO Nigeria Ltd. (Lafarge S.A., 59.95%)	Ewekoro	1,320,000
Do.	do.	Ewekoro II	2,500,000
Do.	do.	Shagamu	600,000
Do.	Obajana Cement Plc (Dangote Industries Ltd.)	Obajana	10,250,000
Do.	United Cement Company of Nigeria Ltd. (Unicem) (Nigeria Cement Holdings BV and Flour Mills of Nigeria Ltd.)	Mfamosing	2,500,000
Coal	Kogi State government	Ogboyoga Mine	NA
Do.	Zuma 828 Coal Ltd. (ETA-ZUMA Group)	Zuma Mine, near Ankpa	NA
Copper, secondary	Sun & Sand Industries Ltd.	Otta	NA
Iron and steel:			
Iron ore	National Iron Ore Mining Co. Ltd. (Government, 100%)	Itakpe	NA
Steel:			
Crude	African Steel Mills Ltd. (Liberty Group)	Electric arc furnace at Ikorodu	170,000
Do.	Ajaokuta Steel Co. Ltd. (Government, 100%)	Blast furnace at Ajaokuta	1,350,000 <sup>1</sup>
Do.	Continental Iron and Steel Co.	Electric arc furnace at Ikeja	60,000
Do.	Delta Steel Co. Ltd. (Asset Management Company of Nigeria)	Electric arc furnaces at Aladja	1,000,000 <sup>2</sup>
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.	Universal Steel Co.	do.	50,000
Rolling mills	African Steel Mills Ltd. (Liberty Group)	Ikorodu	100,000
Do.	Ajaokuta Steel Co. Ltd. (Government, 100%)	Ajaokuta	130,000 <sup>2</sup>
Do.	Delta Steel Co. Ltd.	Aladja	300,000 <sup>2</sup>
Do.	Jos Steel Rolling Co. Ltd. (Zuma Steel West Africa Ltd.)	Jos	210,000 <sup>2</sup>
Do.	Katsina Steel Rolling Co. Ltd. (Dana Steel Ltd.)	Katsina	207,000
Do.	Oshogbo Steel Rolling Co. Ltd. (Kura Holdings Ltd.)	Oshogbo	210,000
Do.	Sunflag Steel (Nigeria) Ltd.	Lagos	120,000
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 6 at Finima, Bonny Island	21
Niobium (columbium) and tantalum	Artisanal miners	Jos region	NA
Nitrogen, urea	Notore Chemical Industries Ltd.	Onne	500,000
Petroleum:			
Crude	Nigerian National Petroleum Corp. (NNPC)/Chevron Nigeria Ltd. joint venture (NNPC, 60%, and Chevron Nigeria Ltd., 40%)	Various locations	NA
Do.	Nigerian National Petroleum Corp. (NNPC)/Elf Petroleum Nigeria Ltd. joint venture (NNPC, 60%, and Elf Petroleum Nigeria Ltd., 40%)	do.	NA
Do.	Nigerian National Petroleum Corp. (NNPC)/Mobil Producing Nigeria Unlimited joint venture (NNPC, 60%, and Mobil Producing Nigeria Unlimited, 40%)	do.	NA
Do.	Nigerian National Petroleum Corp. (NNPC)/Nigerian Agip Oil Company Ltd. (NAOC) joint venture (NNPC, 60%; NAOC, 20%; Phillips Oil Company Nigeria Ltd., 20%)	do.	NA
Do.	Nigerian National Petroleum Corp. (NNPC)/Pan Ocean Oil Corp. joint venture (NNPC, 60%, and Pan Ocean Oil Corp., 40%)	Oil Mining Lease 98	NA

See footnotes at end of table.

TABLE 2—Continued  
 NIGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Petroleum—Continued:</b>				
Crude—Continued		Nigerian National Petroleum Corp. (NNPC)/Shell Petroleum Development Company of Nigeria (SPDC) joint venture [NNPC, 55%; SPDC, 30%; Total E&P Nigeria Ltd., 10%; Nigerian Agip Oil Company Ltd. (NAOC), 5%]	Various locations	NA
Do.		Nigerian National Petroleum Corp. (NNPC)/Texaco Overseas Petroleum Company of Nigeria Ltd. joint venture (NNPC, 60%, and Chevron Nigeria Ltd., 40%)	do.	NA
Do.		Other Nigerian National Petroleum Corp. (NNPC) joint ventures	do.	NA
Do.		Domestic and foreign oil companies engaged in numerous production-sharing contracts, service contracts, or sole risk operations	Niger Delta and offshore	NA
Refined petroleum products	million 42-gallon barrels	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
Do.	42-gallon barrels	Niger Delta Petroleum Resources Ltd. (Niger Delta Exploration & Production PLC)	Topping plant at the Ogbale oilfield, about 45 kilometers northwest of Port Harcourt	100,000
Tin		Artisanal miners	Mines in the Jos area	NA

Do., do. Ditto. NA Not available.

<sup>1</sup>Under rehabilitation.

<sup>2</sup>Care-and-maintenance status.