The Mineral Industry of Nigeria

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The importance of petroleum to Nigeria's economy in 1975 is revealed by the statistics: 92.8% of export value and about 47% of the 1975 gross domestic product, estimated at $25 billion.[2] Lower petroleum production in 1975, however, meant revenues fell short of the fund requirements previously projected for the development plan in 1975. The fall in production was attributed to declining world demand. Soaring labor costs, which added about 30% to the wage bill, a shortage and high cost of spare parts, and reduced metal prices all contributed to a difficult year for the mining industry. The shortage of spare parts was largely due to extreme port congestion, which reached a critical state toward year-end. By September 1975, 420 ships were waiting to enter Lagos port including a large number of cement vessels. The jam at Lagos harbor grew out of the purchase of 20 million tons of cement—at a cost of about $1 billion—with delivery stipulated to take place within a year. The tonnage was far in excess of port handling capacity. Inflation approached 50% in 1975 and continued at a similar rate through the first part of 1976. Inflationary pressures were traced to short supply of locally produced and imported goods, high prices of imports due to high foreign prices, higher freight rates, surcharges arising from port congestion, and domestic wage increases combined with low productivity.

Plans were being implemented to expand the industrial sector, requiring an outlay of nearly $10 billion to be allocated during the third development plan period (1975–80). Flaring of over 2 billion cubic feet of natural gas per day was to end with the construction over the next 5 years of two liquefied natural gas (LNG) and liquefied petroleum gas (LPG) facilities at Bonny and Escravos, costing together over $3.4 billion, by The Shell-British Petroleum Development Co. of Nigeria Ltd. (Shell-BP) and Phillips Oil Co. of Nigeria Ltd. and Nigerian AGIP Oil Co. Ltd. The Government was to hold a 55% equity in the two plants. Two new oil refineries were to be built for local use, each with 100,000 barrels per day capacity, one at Warri by Ente Nazionale Idrocarburi (ENI) and one at Kaduna. Capacity of the existing Port Harcourt refinery was to be expanded from 60,000 to 75,000 barrels per day, and two additional export-oriented refineries were to be built with a capacity of 300,000 barrels per day each. Other industrial projects already underway or planned included a $500 million petrochemicals complex at Port Harcourt; a $110 million nitrogenous fertilizer plant; a blast furnace complex at Ajaokuta; new or expanded power stations or generating units at Sapele, Afam, Delta, Eket, Kainji, Shiroro, Jebba, Gongola, and Ikom; expansion of cement plants at Ukpilla, Sokoto, and Calabar; expansion of the Enugu coal mine; and salt and superphosphates projects.

Mining activity of the third plan was heavily weighted toward petroleum. Approximately $3.2 billion was appropriated for petroleum out of the total $4.4 billion. Private mineral investment, estimated at nearly $2 billion, was also mostly petroleum oriented. With $118 million added for coal development, fossil fuel extraction was to consume nearly 97% of all allocations to the mining sector. Nonferrous mining and minerals development was expected to command more than $380 million in capital spending. Iron and steel development was slated for five times this investment level,

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[2] Where necessary, values have been converted from Nigerian naria (N) to U.S. dollars at the rate of N1.00=US$1.62.

but was progressing more slowly. About $1.7 billion was earmarked in the plan for iron and steel projects.

Port development expenditures were expected to exceed the $350 million earmarked in the third plan. Port congestion loomed as the most severe transportation bottleneck threatening development progress. Port expansion was planned for Lagos/Apapa, Warri, Calabar, Port Harcourt, and Koko. More than one-fifth of all public outlays ($12 billion) was allotted for transportation improvements. The highway system was to get the greatest emphasis. The Federal and State Governments together were to undertake more than $7 billion in highway construction, with most of the activity scheduled in the first half of the plan period.

During 1975, the Federal Government awarded three airborne geophysical survey contracts. The areas to be covered were the Sokoto and Middle Niger region, the Chad Basin, and the Niger Delta and adjoining offshore areas. The three areas totaled about 396,000 square kilometers. Airborne magnetometers and airborne gamma ray spectrometers were to be employed during the survey. A report on a 144,500-square-kilometer survey of the north-central part of Nigeria completed by Hunting Geology and Geophysics of England was expected in early 1976. The area covered extended from the Niger border south towards Benue River and included the towns of Kano, Kaduna, Jos, and Zaria. Part of Hunting's contract included the training of Nigerian Geological Survey scientists in all aspects of airborne geophysics. The surveys were begun in late 1973. Complete coverage of Nigeria was the ultimate objective. The Geological Survey of Nigeria was calling for tenders for geochemical reconnaissance of certain parts of Nigeria. The Nigerian Mining Corp. (NMC) was investigating the Kigom molybdenite deposit, the Kogo tin-sphalerite lode, the Abakaliki lead-zinc deposit, and the Ilesha gold deposit.

PRODUCTION AND TRADE

Oil production declined from an average of 2.3 million barrels per day in 1974 to less than 1.5 million barrels per day by May 1975. Production had improved in the third quarter of 1975, and demand had improved sufficiently by the fourth quarter to enable Nigeria to successfully impose a price increase of more than the 10% agreed upon by the Organization of Petroleum Exporting Countries (OPEC). Crude oil production was 652.5 million barrels in 1975, down 20.9% compared with 823 million barrels produced in 1974.

Crude petroleum processed by Nigeria's only refinery, located at Alesa-Eleme near Port Harcourt, was about 19 million barrels in 1975. The Nigerian Petroleum Refining Co., Ltd. (NPRC), which operated the refinery, was owned 60% by Nigerian National Oil Co. (NNOC) and 40% by Shell-BP. NPRC accepted and processed crude on a fee basis from seven marketing companies including AGIP, BP, Esso Standard Nigeria, Ltd., Mobil Oil Nigeria, Ltd., Texaco Overseas (Nigeria) Petroleum Company, Total Oil Co. of Nigeria and the National Oil Marketing Co. (NOMCO) (formerly Shell Nigeria). The Government acquired a 60% interest in the Shell marketing company in April 1975 and the company's name was changed to NOMCO.

Tin and coal were Nigeria's principal mineral products after petroleum, but production of both declined in 1975. Nigerian tin production continued to decline for the seventh consecutive year, reaching the lowest level in 1975 since 1933. Total coal production for 1975 was 314,000 tons, about 13% more than in 1974. Slight production increases were recorded for cement, marble, and gold in 1975, but kaolin and columbite (a coproduct of tin mining) production decreased. Columbite production was 17% less than in 1974. Whereas tin prices weakened, columbite prices became firmer.

Total exports for 1975 were valued at $8.1 billion, compared with $9.4 billion in 1974. Petroleum exports were valued at $7.5 billion and tin exports at $28 million in 1975, compared with $8.9 billion (petroleum) and $29 million (tin) in 1974. Total imports (c.i.f.) for 1975 were valued at $6 billion. Nigeria and the German Democratic Republic signed a trade agreement on October 15, 1974, in which Germany was to buy crude oil and other minerals. On August 28, 1975, NNOC agreed

to supply Senegal with 18.4 million barrels of crude annually. The 15-year contract was to begin January 1978.

The United States was taking a progressively higher proportion of Nigerian crude and less was being exported to Europe in 1975; demand in both areas was lower than in 1974. This shift in emphasis from European to U.S. markets for Nigerian crude was expected to continue because light low-sulfur, Nigerian crude commands a premium price at U.S. refineries designed to produce a high yield of gasoline.

Table 1.—Nigeria: Production of mineral commodities
(Metric tons unless otherwise specified)

Commodity	1973	1974	1975 p
METALS			
Columbium and tantalum:			
Columbite concentrate, gross weight	r 1,248	1,193	990
Tantalite concentrate, gross weight	1	1	1
Gold, troy ounces	21	6	8
Lead, mine output, metal content e	r 350	220	130
Rare-earth metals, monazite concentrate	5	11	e 12
Tin:			
Mine output, cassiterite concentrate:			
Gross weight	7,884	7,372	6,286
Tin content	5,834	5,455	4,652
Smelter	5,983	5,574	4,677
Tungsten ore and concentrate, gross weight	3	(1)	(1)
Zinc ore and concentrate, metal content e	--	65	745
NONMETALS			
Cement, hydraulic, thousand tons	1,222	1,238	1,364
Clays, unspecified	29,988	16,747	131,125
Feldspar e	5,000	5,000	5,000
Stone:			
Limestone, thousand tons	1,801	1,655	1,631
Marble	8,631	4,240	5,488
Shale, thousand tons	133	198	197
MINERAL FUELS AND RELATED MATERIALS			
Coal, do	327	278	314
Gas, natural:			
Gross production, million cubic feet	735,813	1,017,774	658,839
Marketed production, do	10,700	14,255	16,094
Petroleum:			
Crude, thousand 42-gallon barrels	r 749,820	823,347	651,890
Refinery products:			
Gasoline, do	5,588	5,301	4,658
Jet fuel, do	1,573	709	1,412
Kerosine, do	1,574	2,209	2,587
Distillate fuel oil, do	4,881	4,767	3,801
Residual fuel oil, do	6,100	6,487	5,695
Lubricants, do	--	--	469
Other:			
Liquefied petroleum gas, do	174	160	115
Unspecified, do	--	--	1,522
Refinery fuel and losses, do	959	820	259
Total, do	20,849	20,453	20,518

e Estimate. p Preliminary. r Revised.
1 Less than ½ unit.

Table 2.—Nigeria: Exports of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal destinations, 1974
METALS			
Columbium and tantalum, ore and concentrate	1,145	2,277	Japan 1,292; United Kingdom 387; United States 352.
Iron and steel, metal scrap	282	628	United Kingdom 355; Brazil 152.
Lead, ore and concentrate	314	242	All to Belgium-Luxembourg.
Tin:			
Ore and concentrate	--	1	All to United Kingdom.
Metal, including alloys, all forms	5,251	5,762	United Kingdom 4,135; Netherlands 1,497.
Tungsten ore and concentrate	1	--	
Zinc:			
Ore and concentrate	110	1,230	All to United Kingdom.
Metal including alloys	20	--	
Zirconium, ore and concentrate	--	87	United Kingdom 82.
Other nonferrous base metals, n.e.s.:			
Ore and concentrate	1,955	2,205	Netherlands 1,188; Equatorial Customs Union [1] 490.
Scrap	3,769	8,089	United Kingdom 5,154; Netherlands 1,067.
NONMETALS			
Abrasives, grinding and polishing wheels and stones	(2)	--	
Fertilizer materials, crude	6	(2)	All to Sierra Leone.
Lime	--	538	All to West Germany.
Sodium and potassium compounds n.e.s., ammonia and caustic potash	--	268	Ghana 263.
Stone, sand and gravel	46	--	
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	457	8,896	Equatorial Customs Union [1] 8,260; Netherlands 450.
Coal and coke, including briquets	25,541	17,214	All to Ghana.
Petroleum:			
Crude and partly refined thousand 42-gallon barrels	698,779	714,599	United States 204,437; United Kingdom 115,742; Netherlands 94,816.
Refinery products:			
Gasoline do	468	117	Equatorial Customs Union [1] 70; Niger 22; Dahomey 21.
Jet fuel do	197	226	U.S.S.R. 114; Equatorial Customs Union [1] 92.
Kerosine do	11	26	Equatorial Customs Union [1] 24.
Distillate fuel oil do	414	398	Equatorial Customs Union [1] 147; Niger 125.
Residual fuel oil do	1,095	570	United States 548; Niger 8.
Lubricants do	7	12	Ghana 7; Dahomey 1.
Mineral jelly and wax do	--	(2)	All to Equatorial Customs Union [1].
Nonlubricating oils n.e.s. do	--	(2)	All to Netherlands.
Bitumen and bituminous mixtures, n.e.s do	127	3	Niger 2.
Total do	2,319	1,352	

[1] Consists of the Congo, Central African Republic, Chad, and Gabon.
[2] Less than ½ unit.

Table 3.—Nigeria: Imports of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal sources, 1974
METALS			
Aluminum, metal and alloys:			
Unwrought	350	1,258	Canada 1,000; West Germany 130.
Semimanufactures	8,355	15,043	West Germany 3,342; Switzerland 3,284; United States 1,807; France 1,701.
Copper, metal and alloys:			
Unwrought	27	232	Canada 230.
Semimanufactures	2,905	3,410	United Kingdom 1,084; West Germany 782; Canada 765.
Iron and steel:			
Ore and concentrate including roasted pyrite	3,920	--	
Metal:			
Scrap	1	157	United States 154.
Pig iron including cast iron	185	60	United Kingdom 53.
Sponge iron including powder and shot	51	3,807	Bulgaria 3,612.
Spiegeleisen	(1)	129	Japan 60.
Ferroalloys	160	306	United Kingdom 184; West Germany 43.
Steel, primary forms	r 84,928	114,406	West Germany 60,096; United Kingdom 26,364.
Semimanufactures	656,257	1,021,149	Japan 218,816; West Germany 202,056; United Kingdom 153,722.
Lead, metal including alloys:			
Unwrought	808	51	United Kingdom 50.
Semimanufactures	230	213	United Kingdom 171.
Nickel, metal including alloys:			
Unwrought	1	(1)	All from Czechoslovakia.
Semimanufactures	37	171	United States 131; United Kingdom 20.
Platinum-group metals and silver:			
Ore and concentrate	--	22	All from West Germany.
Metal including alloys, all forms:			
Platinum group thousand troy ounces	(1)	(1)	Mainly from Israel and West Germany.
Silver do	2	(1)	Mainly from West Germany.
Tin, metal including alloys:			
Unwrought	7	21	United Kingdom 20.
Semimanufactures	61	188	Yugoslavia 93; Hungary 60.
Uranium and thorium:			
Ore and concentrate	--	3	All from Sweden.
Metal including alloys, all forms	1	--	
Zinc metal including alloys:			
Unwrought	4,763	2,841	Zaire 2,142; United Kingdom 693.
Semimanufactures	57	580	Zaire 463; United Kingdom 115.
Other:			
Ore and concentrate of base metals, n.e.s	223	48	Sweden 36; United Kingdom 12.
Metals, nonferrous, including alloys, all forms, n.e.s	13,328	6,446	Zaire 3,905; United Kingdom 910; Canada 737.
NONMETALS			
Abrasives:			
Natural	6,280	465	United States 376.
Grinding and polishing wheels and stones	424	649	United Kingdom 420; West Germany 66.
Asbestos	32,190	46,178	Canada 32,468; West Germany 5,097.
Cement, hydraulic	854,549	1,045,603	U.S.S.R. 219,465; Greece 191,195; West Germany 170,296.
Clays and clay products (including all refractory brick)	10,166	19,934	West Germany 3,944; United Kingdom 3,220; Italy 3,151.
Diamond, industrial value, thousands	r $128	$123	India $121.
Fertilizer materials:			
Crude	23,784	29,346	West Germany 14,676; Netherlands 7,453; Belgium-Luxembourg 4,055.
Manufactured:			
Nitrogenous	8,515	8,528	Netherlands 3,792; West Germany 3,116; Belgium-Luxembourg 1,000.
Phosphatic	40,902	73,018	West Germany 19,511; Belgium-Luxembourg 17,444; Japan 15,385.

See footnotes at end of table.

Table 3.—Nigeria: Imports of mineral commodities—Continued

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal sources, 1974
NONMETALS—Continued			
Fertilizer materials—Continued			
Manufactured—Continued			
Potassic	10,767	1,443	Netherlands 1,160.
Other	776	800	Netherlands 580; Belgium-Luxembourg 140.
Ammonia	737	1,018	Japan 394; United Kingdom 285; West Germany 273.
Lime	16,015	16,853	Turkey 5,906; United Kingdom 5,878; West Germany 2,512.
Mica, all forms	561	270	United Kingdom 139; Italy 79.
Pigments, mineral, including processed iron oxides	2,969	3,446	United Kingdom 2,078; West Germany 683.
Precious and semiprecious stones except diamond [2] value, thousands	$124	$246	India $245.
Salt, excluding brine	200,586	181,650	United Kingdom 119,292; Poland 30,597; West Germany 24,939.
Sodium and potassium compounds, n.e.s.:			
Caustic soda	16,571	23,382	West Germany 13,378; United Kingdom 3,495.
Caustic potash, sodic and potassic peroxides	4,213	6,120	United Kingdom 2,664; France 1,612; West Germany 1,029.
Stone, sand and gravel:			
Worked	6,775	592	Italy 351; France 104.
Gravel and crushed rock	34,191	13,834	Morocco 12,241; United States 1,045.
Sulfur, all types, other than sublimed	457	468	United Kingdom 446.
Other nonmetals, n.e.s.:			
Crude	217	3,362	Netherlands Antilles and Surinam 2,376.
Building materials of asphalt, asbestos and fiber cement and unfined nonmetals, n.e.s	15,568	30,016	United Kingdom 7,269; U.S.S.R. 6,266; West Germany 6,241.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	234,041	135,599	Greece 50,350; Netherlands Antilles and Surinam 20,121.
Coal and coke including briquets	1,703	4,952	United Kingdom 4,044.
Petroleum:			
Crude and partly refined thousand 42-gallon barrels	22	--	
Refinery products:			
Gasoline do	509	2,730	Italy 624; Netherlands Antilles and Surinam 544; Iran 535.
Kerosine do	84	257	Italy 72; Libya 33; Netherlands Antilles and Surinam 33.
Jet fuel do	135	553	Netherlands Antilles and Surinam 167; Italy 137; Netherlands 114.
Distillate fuel oil do	51	745	Netherlands Antilles and Surinam 173; Netherlands 173; Italy 157.
Residual fuel oil do	9	6	Netherlands Antilles and Surinam 5.
Lubricants do	280	442	United Kingdom 225; Netherlands Antilles and Surinam 109.
Mineral jelly and wax do	73	39	Netherlands 16; United Kingdom 10; West Germany 9.
Bitumen and bituminous mixtures do	2,494	581	Netherlands Antilles and Surinam 239; Netherlands 149.
Other do	14	11	United States 5; United Kingdom 3; Netherlands 2.
Total do	3,649	5,364	
Mineral tar and other coal-, petroleum-, or gas-derived crude chemicals	43,908	934	United Kingdom 613; United States 186.

[1] Less than ½ unit.
[2] Includes pearls.

COMMODITY REVIEW

METALS

Columbium and Tantalum.—With lower tin production, output of columbium concentrates, a coproduct of tin mining, fell to about 990 tons. Although tin prices weakened, columbite prices became firmer, $2 per pound of pentoxide for the first time in many years. The principal sources of columbite output were Bisichi-Jantar, Vectis Mines, and Amalgamated Tin Mines of Nigeria Ltd. (ATMN), with 381, 356, and 174 tons, respectively. Supplies to users were further obstructed by shipping congestion at Lagos, which reduced shipments to almost nil by yearend.

Gold.—Toward yearend 1975, arrangements were finalized for a geochemical survey to determine the presence of gold in the Ilesha area of Western State. Starting in January 1976, the initial survey was to be geochemical, followed by pitting and drilling. Exploration was to cover 382,000 square kilometers and extend to Birnin, Bwari, and Osi in North Central, North Western, and Kano States, respectively. Gold was not found in appreciable quantity in Nigeria, although small amounts were recovered from streams. Formerly the most important producing areas were in Niger, Zaria, and Sokoto areas, but the major part of output in 1975 came from the Ilesha and Oyo areas where stream sediment panning had been fairly extensive.

Iron and Steel.—The Government announced that the planned Nigerian iron industry would start production in 1985 with technical aid from the Soviet Union. The first meeting was held in March 1975 to discuss the Soviet preliminary report for the iron and steel project. Representatives of the Soviet export-import organization for steel industry construction projects, members of the French consulting firm SOFRASID, and Nigerian officials discussed the Soviet report. The Soviet recommendation for completion of all geological surveys before starting detailed plant design was rejected, and it was suggested that plant capacity be increased from the original 1 million tons per year planned, since current needs and the expected consumption growth rate were to require far more by 1985, the suggested year of start-up. The blast furnace complex was to be erected in Ajaokuta in the Kwara State and was to initially produce 1 million tons of steel per year. Two direct reduction plants with a total capacity of about 1 million tons sponge iron per year were also to be constructed during the 1975–80 national development plan using abundant natural gas. Sites had not yet been selected. Nigerian planners estimated the country could absorb 3.2 million tons of steel annually by 1985—almost 2 million more than the blast furnace capacity.

The Nigerian Steel Development Authority announced that some 200 million tons of iron ore had been discovered in the Itakpe Hill area of Kwara State. The ore contains 37% to 41% iron as magnetite and hematite in a quartz gangue. Deposits with average iron content of 40% and 50% were also discovered at Agbaja near the confluence of the Niger and Benue Rivers, and at Enugu. Reserves of these ores were estimated at 30 million tons and 45 million tons, respectively.

Two Japanese companies were forming a joint venture with Nigerian and British interests for production of small-diameter welded pipes in Lagos. The company, called Standard Industrial Development, was to be capitalized for $17 million with 17% held by Mitsubishi Corporation and 10% by Kobe Steel, Ltd. The remaining 73% was held by Nigerian and British companies. The plant was to start up in 1977; the 1,000- to 1,200-ton monthly production of pipe was to be used in gas and municipal water supply projects. A scrap metal processing plant was to be established by the Lagos State Government, costing $4 million. The Nigersteel factory at Emene, in East Central State, which was destroyed during the civil war, was fully reactivated at a cost of $6.5 million. The annual output of the factory was estimated at 15,000 tons. An expansion scheme estimated to cost $64.8 million was to be started by Bendel Steel Structures Ltd., Warri, Midwestern State. The Nigerianization of existing foreign-controlled steel companies began. Pioneer Metal Products, a producer of galvanized sheets and largely owned by Japan's Marubeni Corp., agreed to increase local holdings to 40% and accept Nigerians as executives. Galvanized Industry, in which Yodogawa Steel Works, Ltd. and C. Itoh & Co., Ltd. of Japan had holdings, was to take in 20% Nigerian capital, later to be expanded to 40%.

Lead and Zinc.—Lead-zinc mineralization extends discontinuously for about 563 kilometers in a narrow belt in Ishiagu and Bende in East Central State and also in Bauchi Province in North Eastern State. The most important deposits were found in Abakaliki, where NMC had been exploring. As an incentive to miners, the Federal Government declared the mining of lead-zinc by underground methods to be a pioneer industry, thereby providing generous tax-free periods.

Tin.—Tin export control was in force throughout the year, but this had no effect on Nigeria's output because production did not reach the country's quota. Poor demand for tin on the world market was compounded by rising labor costs, labor scarcity, and rising power and production costs. A wage compromise arrangement was concluded between the Employers Association and the Trade Unions, enabling operators in the tin industry to stay in business. It was estimated that the increase in the wage bill during the year was $256,000 to ATMN after introduction of the Udoji wages award at the beginning of 1975. Nigeria's Makeri tin smelter was at a standstill early in 1975 as a result of a strike called in support of a 200% pay rise, following a management offer of 30%. Makeri Smelting Company Limited had 17,700 tons per year capacity.

A government organization, the NMC, continued its search for minerals throughout 1975 and explored the possibility of participation with established companies such as ATMN and the Makeri Smelting Co. A new 22-story headquarters building was being constructed for NMC, scheduled for occupation by mid-1978. NMC arrived at a settlement with Gold & Base Metals Mines of Nigeria Ltd. (GBMM) on the development of the Liruie lode in Kano State. The NMC was to be the largest shareholder in the new company, Ririwar Mines Ltd., with GBMM holding 20% interest. Mine development was to cost about $32 million, including a treatment plant for 900 tons of ore per day. During 1975, GBMM produced 383 tons of cassiterite and 9 tons of columbite. The latest ore reserve estimates for Liruie follow: Measured, 351,000 tons; indicated, 2,478,000 tons; and inferred, 3 million tons.

ATMN produced 2,604 tons of cassiterite during 1975 and 174 tons of columbite. The company purchased two bucket wheel excavators and about 2 miles of conveyor system costing more than $1.6 million. Delivery of the excavators was delayed by the backlog of ships at Nigeria's main port. Both excavators were to work tin deposits in the Sabon Gida area, about 150 feet deep, in conjunction with draglines to remove the overburden. The first tin ore from these operations was to be recovered by mid-1976. The operation would be the deepest opencast mining venture on the Jos Plateau.

United Tin Areas announced proved reserves on their plateau areas at only 40 tons of cassiterite, scarcely adequate for 6 months' production. The company disposed of more than half of its mining leases to Vectis Mines and ceased columbite production.

NONMETALS

Cement.—Nigeria had six cement factories: The Calabar Cement Co. at Calabar in South Eastern State; the West African Portland Cement Co. (WAPC) at Ewekoro in Western State; Lagos Cement Works; the Cement Co. of Northern Nigeria Ltd. at Sokoto; Nigerian Cement Co. Ltd. at Nkalagu in East Central State; and a plant at Ukpill in Mid-Western State. Their entire production did not exceed 1.4 million tons, including 750,000 to 800,000 tons from Ewekoro and 500,000 tons from Nkalagu. Extensions for the plants at Sokoto and Calabar were in progress and were to enable them to attain total production of about 1 million tons for both by 1978. The Nigerian Cement Co. at Nkalagu awarded a $9.7 million contract to Costain West Africa Ltd. for an extension to the plant there. This was part of a $43.7 million expansion planned by the company to step up its present production by 50% to 750,000 tons annually. New cement plants planned or started also included one at Ashaba with WAPC; one at Yandei with the Swiss group Cementia; and one at Shegamu with the Industrial investment and Credit Corp., the Government of Western State, and WAPC. The whole of these operations was to provide supplemental production of 1.8 million tons to Nigeria, each with a capacity of 600,000 tons per year. The foundation stone for the $96 million cement plant at Shagamu was laid in July 1975. The cement complex was situated at Kilometer 64 on the Lagos-Shagamu road. Production was to start in

1977 with about 1,500 people employed. An asbestos cement plant with 30,000 tons annual capacity was inaugurated in March 1975 in Oron, South Eastern State, by the Italian firm Technimpianti.

The Government had ordered 20 million tons of cement in 1975 to be delivered within 12 months. At a rate of 1.6 million tons per month, the import shipments proved to be more than twice the unloading capacity of all of Nigeria's ports combined. The massive orders led to an armada of ships anchored off Lagos; by September 1975 more than 420 freighters were waiting. Some ships waited for 8 months to a year. The cement lost its binding quality after 6 months and became worthless for construction; even so, millions of tons of the ruined cement found its way to small contractors. Estimates were that as much as half the cement went bad. It was widely speculated that in 2 or 3 years buildings might collapse as a consequence. Ironically, by 1976, shortages of cement were reported and the price rose 30%. The economic repercussions of clogging at the ports were severe in closing down factories that could not get parts, in preventing vital exports, and in feeding the inflation rate.

Clays.—About 2.7 million tons of clay was discovered at Awkunanaw near Enugu in March 1974.[3]

Fertilizer Materials. — *Phosphate.* — A study was to be made of the phosphate deposits of southwestern Nigeria, which are an extension of the Togo phosphates. The total cost of all exploration programs to be undertaken by the Nigerian Government and specialist groups was estimated at $15 million. Hunting Geology and Geophysics and Polservice (Pologne) were to participate in geophysical studies. In 1975, Nigeria had no fertilizer production facilities of its own, but an 18,000-ton-per-year P_2O_5 single-superphosphate plant was nearing completion at Kaduna in Central North State. The plant was being financed and built with Japanese aid and was to utilize phosphate rock from Togo. Fertilizers were heavily subsidized by the Nigerian Government, up to 70% of the total cost, but supply was restricting consumption. Fertilizers were procured by the State Governments, and the poor distribution system within the country was probably the major problem hindering efficient supply.

Stone.—*Limestone.*—A reserve of about 32 million tons of limestone was reported in the Lokoja area of Kwara State.

MINERAL FUELS

Coal.—The main coal mines were at Enugu in East Central State, but a new mine was opened in Okabba in Kwara State in 1974. The Nigerian Coal Corp. (NCC), a Government organization responsible for the mining and distribution of coal, announced the possibility of a new coalfield near Lafia in Benue Plateau State. It was reported that the estimated reserves near Lafia were in excess of 100 million tons. The coal had a relatively high sulfur and ash content and would require considerable dressing before coking. The main consumers of coal were the Railway Corporation, the Electricity Corporation of Niger, the Nigerian Ports Authority, cement companies, and firms operating river boat fleets. An $8 million contract for the sale of 2.5 million tons of coal for export was signed in July 1974 between the NCC and an indigenous company, the United National Co., Nigeria Ltd., Lagos.[4]

Coal reserves were estimated at about 245 million tons. Consideration was being given to establishing a chemical industry based on coal or lignite. Carbonization tests have revealed a high yield of tars and oils. Promising lignite for development occurs on both sides of the River Niger between Okpanam in the Benin area and Nnewi in the Onitsha area. Reserves of 71 million tons were indicated in Benin by drilling.

Petroleum.—Only OPEC's African members Algeria, Libya, and Nigeria showed a decrease in per-barrel revenues in 1975. Estimated Nigerian Government oil revenue was approximately $6.6 billion for 1975, compared with $8.9 billion for 1974, a decrease of 26%.[5] The fall in petroleum production experienced in 1975 was attributed to declining world demand and to a policy of production conservation. It was also argued that Nigerian crude was overpriced in relation to other OPEC oil of similar quality. Demand had so improved by the fourth quarter of 1975 that Nigeria felt confident in raising its price by more than the 10% agreed upon by OPEC in Oc-

[3] Daily Times of Nigeria Ltd. (Apapa, Nigeria). Nigeria Yearbook 1975, November 1973 to October 1974, p. 21.
[4] Page 36 of work cited in footnote 3.
[5] Petroleum Economist (London). Estimated Oil Exports and Revenues of Main OPEC Countries. V. 43, No. 9, September 1976, p. 338.

tober. The Government's across-the-board price for its 55% of Nigerian oil production (buy-back oil) reached $12.75 per barrel, the highest in OPEC for that grade of oil. Earlier in 1975, troubled by persistent decline in crude oil production and exports, and the consequent erosion in oil revenues, the Nigerian Government had moved to make its crude more competitive by reducing its direct sale (to buyers who did not produce oil in Nigeria) and buy-back prices by 20 cents to $11.40 per barrel for 34° gravity crude. The income tax rate on equity crude (producers' remaining 45% of production) was also raised to 85% from the previous 65.7%, while the royalty rate was increased to 20% from 16-2/3% in April 1975. By yearend 1975, in two separate moves, the Government had increased oil revenues, pushing up the average buy-back price by about 38 cents per barrel. By increasing selling and posted prices, the Government reduced company profit margins from 50 cents to 30 cents per barrel, bringing them closer to Middle East levels. Producing companies claimed that the increases would bring cash-flow problems, pointing out that the investment per barrel of production is higher in Nigeria than in the Middle East. The posted price for the first quarter of 1976 was to be $13.709, raised from $13.071 per barrel for 34° gravity crude. The Government also imposed restrictions on credit terms extended to oil producing companies, which had a 90-day credit on buy-back oil. The companies were being given 60 days' credit from the date of loading and asked to pay an additional 10 cents per barrel should they require a further 30 days' credit.

While the Government was successful in raising the price in late 1975, the producing companies considered the margin allowed per barrel too low in the face of inflated capital costs to justify large new investments and substantially reduced their exploration activities. Drilling rigs in operation declined gradually but steadily all year from 27 at the beginning of 1975, and many were taken out of the country by yearend. By 1976, drilling rigs in operation were down to 15, and Japan Petroleum Co. (Nigeria), Ltd., canceled one rig in spite of stiff penalty payment clauses. Occidental Petroleum Nigeria's entire investment in Nigeria was written off in 1975. After a number of unsuccessful attempts to negotiate an arrangement whereby the firm's discovery on oil prospecting license 90 could be economically developed, Occidental relinquished interest in this block and wrote off the remaining oil investment of approximately $33.3 million. Three other Nigerian offshore exploratory blocks had been relinquished in 1974.

All exploration rights not already allocated were reserved for NNOC, giving it almost a third of offshore concessions. NNOC was also entitled to drill in deep water outside existing concession areas and owned some onshore rights. Including NNOC, 14 companies were prospecting for oil. The others were Nigerian Agip Oil Company, Limited; Gulf Oil Company (Nigeria) Limited; Mobil Producing Nigeria, Phillips Oil Company (Nigeria) Ltd.; Safrap (Nigeria); Shell-BP Petroleum Development Co. of Nigeria Ltd.; Tenneco Oil Company of Nigeria; Ashland Oil Co. (Nigeria); Deminex (Nigeria) Ltd.; Japan Petroleum Company (Nigeria) Ltd.; Pan Ocean Oil Co., Ltd.; Texaco Overseas (Nigeria) Petroleum Company Ltd.; and Henry Stephens and Sons Ltd. (owned by Chief Fajemirokun). Some were in partnership: Phillips was in partnership with Agip; Pan Ocean with Delta; Texaco with Tenneco; and Ashland with NNOC. In January 1975, a petroleum deposit of apparently high quality was discovered in West Central State by the Mobil-Tenneco-Sun Oil consortium. An onshore strike in midwestern Nigeria was also reported by Pan Ocean. The well, Ogharefe No. 3, tested 14,674 barrels of oil and 16.5 million cubic feet of gas per day from three separate zones between 9,830 and 10,350 feet. The gravity of the oil ranged from 43° to 45° API with a negligible sulfur content. The well was located 32 kilometers south of Benin City in Mid-West State.

Through NNOC, the Government held a 55% share in the Nigerian operations of Shell-BP, Gulf, Mobil, Agip-Phillips, Essence et Lubrifiant de France (ELF) and Texaco, the main producer companies. Ashland Oil, which began production in June 1975, was the only company operating under a production-sharing contract with NNOC, representing the startup of NNOC's "own" oil production. Ashland began production from its onshore Izombe oilfield at an initial rate of 10,000

barrels per day and had a target of 20,000 barrels per day by the end of 1975. Ashland was to recover costs from a portion of production, and the remaining production up to 50,000 barrels per day was to be split 65%–35% in favor of NNOC. The split was to increase to 70%–30% on production over 50,000 barrels per day. The field was found in early 1974, located in Block OPL 118 in the Oguta division of East Central State. Oil from Izombe was produced from six wells through a flow station into the 10-inch Izombe-Ebocha pipeline to the Brass River coastal terminal. Ashland was drilling a wildcat in an offshore production contract area. Texaco increased production sharply to 9,210 barrels per day in November 1975. Texaco/Chevron's offshore fields were suspended from production of Government orders in May 1974, pending outcome of negotiations which were held through much of 1975 to give a 55% participation to the Government. The company expected to be producing 20,000 barrels per day by year-end 1975 and to reach 50,000 barrels per day in 1976.

Seven foreign-owned oil companies marketed all refined petroleum products consumed locally except for LPG. An agreement giving the Government majority interest (60%) in Shell Nigeria was negotiated. The new company was called National Oil Marketing Co. and had legal authority to market petroleum. The only refinery in Nigeria was owned and operated by Nigerian Petroleum Refining Co. Ltd., which was owned 60% by the Government, 20% by BP, and 20% by Shell. The Government has determined that future refineries will be 100% Government-owned, although others may operate them.

Nigerian gasoline consumption soared almost 30% in 1974 to 20,000 barrels per day. Gasoline shortages have become a chronic problem. Notable disruption of petroleum supplies occurred throughout the country over much of 1975. Domestic marketing of oil products was chaotic despite efforts by the marketing companies and some emergency actions by Government. Striking truck drivers caused a shortage of petroleum products in mid-January, and Nigeria's only refinery was shut down for maintenance throughout February. The problem of supply was compounded by smuggling (since the controlled price in Nigeria was lower than in neighboring countries), hoarding, and profiteering. Transport fares and haulage prices also soared. The Government outlined immediate short-term measures to arrest the shortages and commissioned a team of experts to find the cause or causes of frequent fuel shortages. Minirefineries, able to handle 5,000 barrels of oil per day, were to be set up, and oil storage facilities were to be built throughout the country. A $6 million contract was signed with Norway's Det Norsek Oljeselskap (Texas subsidiary, Val Verde Corp.) for two portable minirefineries to go into operation by mid-1976. The capacity of the Port Harcourt refinery was to be expanded to 75,000 barrels per day by the installation of a skid-mounted mobile distillation unit capable of refining 20,000 barrels of crude per day. Other measures included the construction of new jetties and the expansion of existing ones to handle the offloading of larger quantities of imported petroleum products and an increase in the fleet of road tankers. There were also indications of other refining and pipeline contracts being privately negotiated on a crash basis to accelerate projects to solve the distribution problem.

The Government approved establishment of two LNG/LPG gas plants with capacity of 1 billion cubic feet per day each; they were expected to cost over $2 billion each. These were first introduced during the second development plan, but were expected to be implemented during the third plan. One would be built at Bonny (Rivers State) and would have Shell/BP as the Government's partner. The other would be built either on the southern bank of Escravos River in Mid-West State or in some other more suitable locality and would incorporate an ethylene complex with Phillips and AGIP as partner. The Federal Government would have 60% participation in each plant and 50% in the LNG tanker fleet. The Government would establish, own, and operate an integrated gas-gathering company to serve all gas projects.

The third development plan included a $486 million investment in a petrochemical complex near Port Harcourt. The following capacities were tentatively recommended,[6] pending negotiations: Ethylene 100,000 tons per year; caustic soda, 40,000 tons per year; vinyl chloride, 40,000 tons

[6] European Chemical News (London). ECN New Projects. V. 27, No. 691, June 20, 1975, p. 18.

per year; PVC, 40,000 tons per year, and polyethylene, 40,000 tons per year. The ethylene plant was planned for expansion in the future to 250,000 tons per year. It was also recommended that a 1,400-ton-per-day ammonia plant and a 10,500-ton-per-day methyl fuel plant be incorporated into the complex. Production was expected to begin by 1978. A nitrogenous fertilizer facility was also planned utilizing gas. Plans called for producing 450,000 tons per year of ammonia and 260,000 tons per year of urea. These plants were to be situated near the Port Harcourt complex and were to utilize tail gas to supplement the natural gas feedstock. A completion date of 1977 was hoped for project completion. Scientific Design of the United Kingdom signed a contract to act as consultant, and approximately $113 million was to be spent on the two projects. Two new oil refineries were to be established at Warri and Kaduna with capacities of 100,000 barrels per day and 70,000 barrels per day, respectively. The Warri refinery was to include catalytic cracking facilities and an aromatics separation unit. In addition, two export-oriented refineries each with 250,000 barrels per day capacity were to be built.