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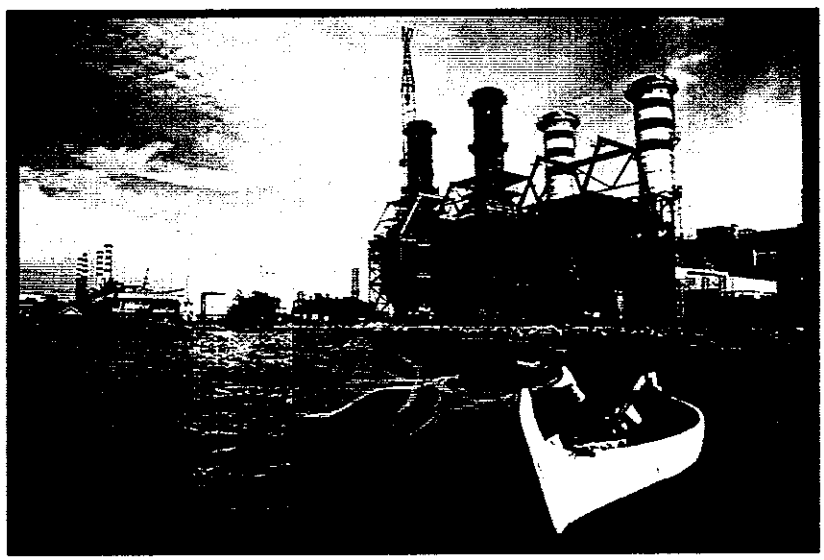
Nigerian Energy Sector



Briefing Package

USAID
Office of Energy, Environment and Technology

BECHTEL

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A

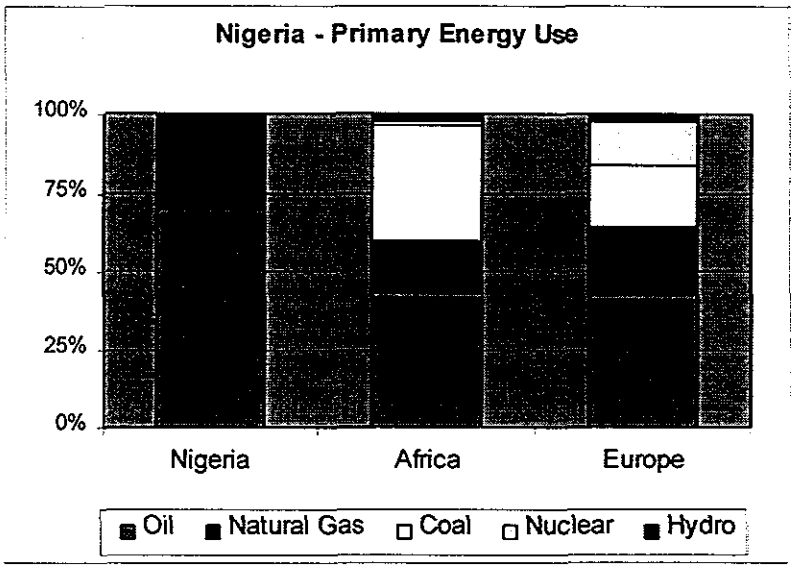
ENERGY OVERVIEW

12th largest oil producer in the world

Nigeria is the 12th largest oil producer in the world, and the largest in Africa. It currently produces 2.1 million bbl/d of crude and around 35 bcm of gas. It is also the most populous country in Africa with a fast growing population of around 110 million people.

Proven oil reserves are 22.5 billion bbl - approximately 2% of the world's total reserves. Most of the proven reserves are spread over 250 small fields, containing less than 50 million bbls each, whilst high gas to oil ratios mean that large quantities of associated gas must be produced along with the crude.

Nigeria contains an estimated 124 tcf of proven natural gas reserves (10th largest in the world). With both associated and non-associated gas reserves the total could reach as much as 300 tcf. Nigeria currently flares over 75% of gas produced - in 1997 Nigeria flared 26 bcm from a total annual production of 36 bcm. In fact, nearly 10% of the total annual gas production of Africa, was flared in Nigeria.



Oil dominates primary energy consumption, particularly when compared to the average for Africa or Europe.

Oil accounts for 95% of foreign currency earnings

The Nigerian economy is largely dependent on the oil sector, which accounts for nearly 50% of its GDP and 95% of its foreign currency earnings. This dependence can be gauged by observing that a change in the oil price by US$1 per barrel increases/decreases Nigeria's foreign exchange earnings by about US$650 million or 2% of GDP.

Nigeria currently has 5,800 MW of installed electrical generating capacity and around 8,000 MW of hydro-electric development is planned. Approximately 43% of the population have access to electricity but experience frequent disruptions to supply and often rely on back-up generators.

The Nigerian energy paradox is that energy exports keep the nation afloat while the lack of energy domestically constrains the economy from diversifying and growing. In the face of energy scarcity, policies promote wasteful use of energy and increased demand - for instance,

electricity prices of around $0.02 / kWh are some of the lowest anywhere in the world.

ENERGY POLICY

Political tension

Civilian President Olusegun Obasanjo was sworn in on 29 May 1999. He replaced military ruler General Abdulsalami Abubakar, who took power in June 1998 following the death of notorious military ruler General Sani Abacha. Tensions between the Muslim North, which has dominated the country since independence and the South are the key source of political tension. As a large oil producer and an emerging major natural gas producer, Nigeria remains a key investment location.

Serious obstacles to business operations

Obasanjo inherits a country in which levels of institutionalised corruption, policy drift, collapsing infrastructure, insecure supplies of essential commodities and poor communications present serious obstacles to business operations. Security of contract in a highly personalised political environment remains unassured. Tensions in the oil producing Niger delta place companies in this area at risk from kidnap and sabotage by marginalised ethnic groups.

Niger Delta - the major source of oil wealth

Since he was sworn in, Obasanjo has cleared out the top ranks of the armed forces, ordered a review of all the contracts that his predecessors signed this year, and set up an inquiry into human-rights abuses. However, his immediate problem is the Niger Delta, the source of almost all of Nigeria's oil wealth, which is a battleground with rival groups fighting for resources and the largesse of the big oil companies operating there.

The hierarchies and structures which help hold most modern states together do not exist in Nigeria. They have been undermined and distorted by ethnic or religious loyalties, by networks of mafias or secret societies, and by bribery. This means that people are rarely appointed because of ability, and contracts rarely go to the lowest or most reliable bidder.

Compensation culture

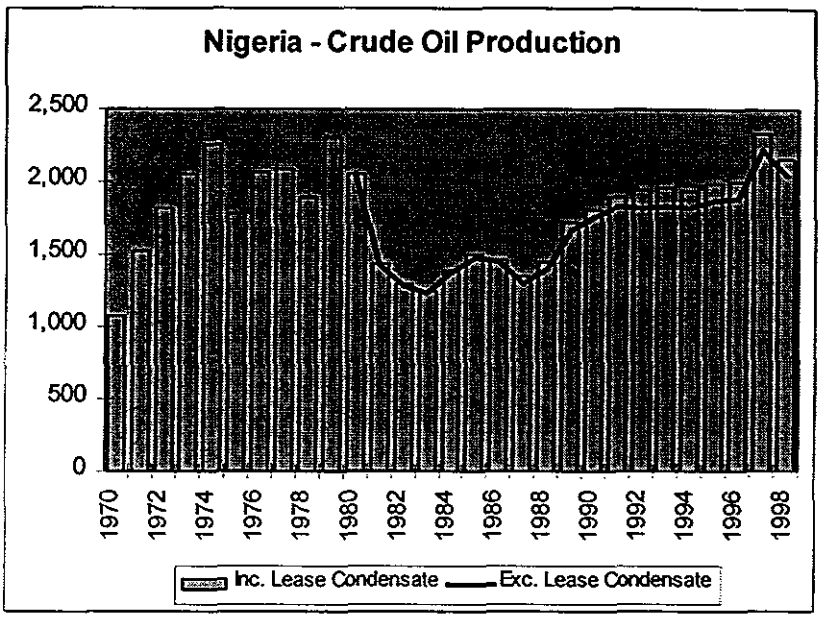
The people of the Niger Delta know that oil worth billions of dollars flows from under their feet but they get nothing from it. They suffer from polluted rivers, disrupted farming and cut-down forests, without any compensating benefit from oil. In the past when oil was spilt, the local chief was paid off. This has created a "compensation culture": damage a pipeline, then demand cash for the damaged land.

Several structural changes have been made to Nigeria's economy in the last few months. The dual exchange rate, an issue that has troubled creditors and the IMF, was abolished and the Central Bank of Nigeria's autonomy has been restored in the formulation and implementation of monetary policies.

Nigeria became a member of OPEC in 1971. Over the last 2 years Nigeria has been producing an average of 2-2.3 million bbl/d of crude oil. However, since March 1998 Nigeria has agreed, as part of OPEC's efforts to stabilise the world oil price, to a quota of 1.89 million bbl/d for crude oil production which represents a total production cut of 373,000 bbl/d from its previous quota. These quotas should be treated with some care as two previous agreements have not been fully implemented by a number of OPEC members, including Nigeria.

OIL SECTOR

The Nigerian National Petroleum Corporation was formed in 1977. The corporation has sole responsibility for upstream and downstream



developments, and is also charged with regulating and supervising the oil industry on behalf of the Nigerian Government.

In 1988, the corporation was commercialised into 12 strategic business units, covering the entire spectrum of oil industry operations. The most pertinent subsidiaries are:

- National Petroleum Investment Management Services (NAPIMS)
- Nigerian Petroleum Development Company (NPDC)
- The Nigerian Gas Company (NGC)
- The Products and Pipelines Marketing Company (PPMC)

DPR and NAPIMS play a very crucial role

The industry is also regulated by the Department of Petroleum Resources (DPR). The DPR and NAPIMS play a very crucial role in the day to day activities throughout the industry.

Most oil and gas projects are formed as joint venture operations between foreign oil companies and NNPC (as the major shareholder). However, a recent deepwater offshore development program is being carried out under production sharing contracts.

Major Joint Venture companies include

- Shell Petroleum Development Company (SPDC)
- Mobil Producing Nigeria Limited
- Chevron Nigeria Limited
- Nigerian Agip Oil Company (NAOC)
- Elf Nigeria Limited
- Texaco Overseas (Nigeria) Petroleum Company (TOPCON)

UPSTREAM

The upstream sector is controlled by NNPC through its subsidiaries, and the joint ventures or production sharing contracts with all foreign oil

companies operating in Nigeria. Typically, this translates into rights to more than half of the oil produced by each joint venture.

Still attractive area for upstream investment

Despite the uncertain economic climate, Nigeria is still seen as an attractive area for upstream investment by international oil companies, particularly in the offshore and deepwater areas including the giant Bonga field currently being developed by Shell. By developing offshore, foreign oil companies can undertake cost-effective production without the associated security and environmental costs of onshore operation.

Current problems in the sector stem from the inability of NNPC to contribute towards its share of upstream development costs. As the cash flow situation has worsened, projects have halted and capital spending suspended until credible settlements between NNPC and its partners can be reached.

Since 1991, new exploration agreements have switched from joint-venture deals to production sharing contracts, which require international partners to pay all up-front costs and recover them from crude sales. However, there is increasing concern that joint-venture deals will continue to hamper the cashflow of NNPC while it renegotiates the terms of its upstream contracts.

50% increase in oil production by 2003

President Obasanjo has recently announced plans to increase oil production by approx. 50% by 2003. Nigeria produces 10 streams of crude oil / condensate, of which *Bonny Light* and *Forcados* are marker crudes on the world market.

DOWNSTREAM

Under close control of the NNPC

The downstream oil industry is also under close control of the NNPC, which owns the countries four refineries and has a significant shareholding in all of the larger marketing companies. However, lack of money has contributed to the current state of disrepair of the downstream infrastructure and is forcing NNPC to recognise the logic of reducing direct state involvement in the oil industry. The government has stated that it plans to deregulate the downstream sector.

For this to happen, the heavy price subsidies on refined products needs to be scrapped in order to allow prices to become market related. This is likely to be met with resistance from most Nigerians and may prove problematic for a democratic government to implement in simple and swift manner.

Refinery capacity of 440,000 bbl/d

Nameplate capacity of the four refineries is 438,750 bbl/d but problems of sabotage, fire, poor management and no turnaround maintenance mean that it is rare for throughput to reach these levels. Domestic consumption is around 300,000 bbl/d and theoretically, Nigeria should be able to produce enough refined product for its domestic market. However, heavy subsidies, cross-border smuggling and poor refinery efficiencies mean that frequent shortages have forced it to import gasoline and other light products.

The skewed product slate of refineries results in too much heavy products such as fuel oil and a shortage of lighter products specifically gasoline and jet fuel. Heavily subsidised product prices encourage large-scale smuggling to neighbouring states for re-sale at higher prices. Bottlenecks in the distribution infrastructure cause logistical problems that also contribute to the frequent shortage of refined products in the domestic market.

The IMF in a recently concluded agreement for a monitored economic program suggests privatizing the Kaduna refinery, as it has recently undergone rehabilitation, and partial privatization of the other three refineries.

DISTRIBUTION & MARKETING

Distribution and marketing of refined products is undertaken by 5 international companies, 3 domestic companies and over 750 other marketing *independents*, who are licensed by NNPC to market petroleum products. Although NNPC is not engaged directly in the marketing of refined products, it has substantial ownership in all of the marketing companies and is therefore involved along the whole downstream chain.

Pricing is controlled by the Government

Pricing is controlled by the Government at all levels in the industry. It regulates the transfer prices paid within NNPC and sets product prices at wholesale and retail level. The NNPC subsidiary, PPMC buys crude oil for the refineries at prices set by the government and then sells the refined products to the marketing companies. Retail prices are heavily subsidised - it is estimated that the government pays $2.5 billion in subsidies.

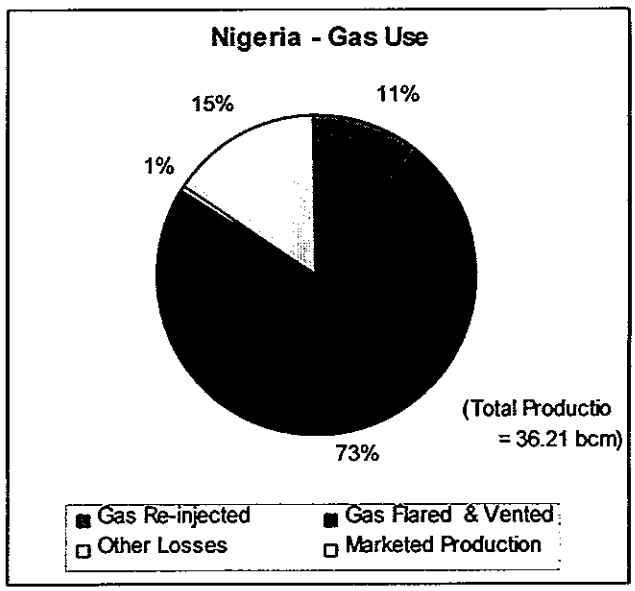
GAS SECTOR

Exploit vast reserves of gas

At current rates of production, it is estimated that Nigeria's oil reserves could well be exhausted in less than 30 years. The government therefore sees the need to diversify and broaden the country's revenue base. One of these areas is to exploit the country's vast reserves of gas.

Inappropriate pricing, absence of adequate gas infrastructure, low economic development and an unstable macroeconomic environment are all responsible for low gas utilisation in Nigeria.

The new managing director of the NNPC, Mr Gaius-Obaseki has restated the government's resolve to make gas exploration and exploitation one of its main priorities over the next decade. The government will create an enabling environment and infrastructure for the development of gas to electricity projects and projects aimed at increasing the domestic and industrial use of natural gas.



The growing concern about the utilisation of gas has caused the government to introduce associated gas clauses in recent production sharing contracts signed with oil companies. The main thrust of the gas policy is to eliminate gas flaring and encourage producers to make capital investment in the production phase. Official government policy is to cease all flaring by 2010.

NGC has a monopoly of domestic gas supply

Nigerian Gas Company (NGC), a subsidiary of NNPC, has the monopoly of supply of gas to the domestic economy. Unfortunately, its present gas infrastructure, including compressor stations and pipelines are inadequate. Currently, over 90% of the gas supplied to NGC is supplied by Shell. The greatest limitation to the expansion of gas supply sources to include other producers is the absence of NGC pipelines in their operational areas, which are mostly offshore. The NGC pipelines are concentrated in the Western Niger Delta. The largest pipeline, the Escravos-Lagos Pipeline (ELP) was initially designed to supply gas to the NEPA power station near Lagos and to industries in the Lagos area. However, the ELP has vastly increased its scope and is now supplying gas to industries along its route.

Total gas network of around 1,000 km

The total gas gathering, transmission and distribution network in Nigeria is about 1,000 km. This is a long way short of the extensive integrated pipeline network that the nation requires to effectively utilize its gas resources.

GAS UTILISATION PROJECTS

There are a number of gas utilisation projects in Nigeria:

- Nigerian LNG Project
- NNPC/Mobil (Oso) NGL Recovery Project
- NNPC/Chevron NGL Project (Escravos Gas Project)
- SPIL Methanol/MTBE Project
- NNPC/Mobil Methanol Project
- Energo Gas (NNPC/MF Kent) Gas Project
- West Africa Gas Pipeline Project
- NNPC/Drake Oil Project

The Nigerian LNG project originally began in March 1985. A Framework Agreement was signed in November of that year between the NNPC, Shell Gas BV, Cleag Bermuda (ELF) and Agip International BV, with Shell as the technical partner, because of its vast international experience. Equity structure of the project is as follows: NNPC (49%), Shell (25.6%), Elf (15%), Agip (10.4%).

7.2 bcm per annum of LNG

It consists of a 5.7 million metric tonne per annum capacity liquefied natural gas plant. The project includes a two-train liquefaction plant producing about 7.23 billion cubic meter of LNG per annum, a 218 km gas pipeline system linking the plant to the gas fields at Soku, Obiafu/Obrikom, Ibewa/Obiagi, Idu and Ubeta, all located in the Eastern Niger Delta, associated utilities, storage/loading facilities and other infrastructure. It has recently been announced that the capacity is to be increased to 10.85 bcm in 2002.

The major share of the production volume (48.95%) has been contracted to ENEL, the Italian state electricity company, while the remaining volume has been sold to the following gas companies: Enagas of Spain

(22.38), Gaz de France (6.99%), Botas (12.99%), leaving about 9.09% of uncommitted volume.

POWER SECTOR

More than 90% of commercial establishment rely on back-up generators

Nigeria has plans to increase access to electricity throughout the country to 85% of the population by 2010 up from 43% in 1999. Due to low tariffs and lack of maintenance the country's electricity supply remains unreliable such that more than 90% of commercial establishments have to rely on expensive back-up diesel generators. Such back-up generators can add as much as 25% to the total costs of industrial enterprises.

A number of power stations are standing idle through a lack of maintenance and spares or grid problems. The capital is not available to sustain their operation. This could be due to low tariffs or poor bill collection.

The IMF in an agreement for a monitored economic program suggests privatizing Nigerian Electric Power Authority. It is suggested that NEPA be divided up into various component entities (generation, transmission, distribution and/or regional) prior to privatization.

OIL & GAS - KEY ISSUES

- Bottlenecks and factors which are creating a disincentive to invest in gas infrastructure - for many producers increased infrastructure merely equates to increased liability to sabotage.
- Understand the affordability of gas - identify the price consumers (domestic, industrial, power) can afford to pay for gas
- The substitution of liquid fuels with gas will be a key driver in the development of new gas markets
- Least cost planning—optimize the fuel mix in the energy sector to ensure competition on real price between fuels
- Potential technologies and markets for adding value to hydrocarbons e.g. petrochemicals, smelting
- Distance to markets - abundant hydrocarbon resources but low potential in domestic and regional markets for value added products
- Operational condition and low availability of the four domestic refineries

• OIL & GAS - POSSIBLE INTERVENTION

SHORT TERM

- Return refineries to full operation
- Framework issues - develop enabling regulation and appropriate tariff/pricing structures
- Environmental issues - reduce leakage and sabotage.

LONG TERM

- Develop markets and infrastructure for gas
- Displace liquid fuels with gas for power genereation
- Develop power markets to utilise gas, including the private provision of power
- Add value to hydrocarbons - develop a market in petrochemicals or energy-intensive industries

POWER – KEY ISSUES

- Supply Reliability—Frequent outages from generation shortages, inadequate transmission and distribution systems
- Tariffs—Average price is $0.02 per kWh, below operating cost
- Customer Inability to Pay—Widespread poverty
- Foreign Investment—How to attract?
- IPPs—Roadblocks in legal/regulatory framework, pricing, corruption, government's credit worthiness
- Rural Electrification—Only 10% of Population has access to power
- Unbundling—Need to separate the transmission/dispatch function to facilitate IPPs and privatization
- Commercialization—Must improve management capacity, corporate governance, IAS, financial/operating performance
- Privatization—Optimize pre- and post-privatization approaches
- Rehabilitation and Modernization—6,000 MW of electrical capacity installed, but only 2,000 MW in operation
- Self Generation—Major industries and large commercial build their own, reducing utility's revenue base
- Role of Cogeneration—Untapped potential to expand cogeneration
- Technology—Need software/hardware planning and operating systems and tools
- Least Cost Planning—Optimize use of indigenous natural gas and hydroelectric resources; optimize transmission system
- Management Capacity—Training in pricing, finance, economics, performance management, operations
- Distribution—Enhance customer service, collection, billing; introduce automation and modern information systems; eliminate corruption and pilferage

POWER – POTENTIAL INTERVENTION

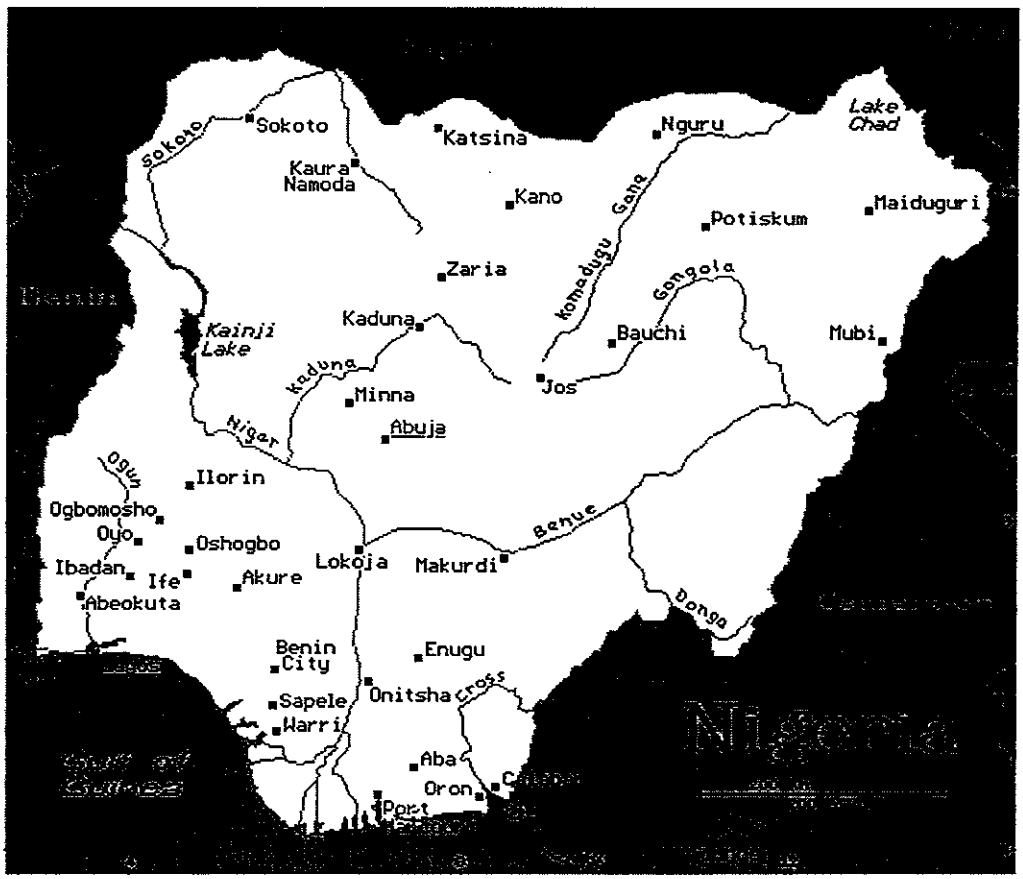
SHORT TERM

- Capitalize on Existing Captive Power—develop Captive Power Purchase Agreement for sales to the utility
- Promote Cogeneration—work with Ministries of Finance to provide incentives; Ministries of Power to promote investment; and utilities to ensure grid access and develop Power Purchase Agreements
- Plant Renovation and Modernization—provide technical assistance
- Raise Energy Prices—work with ministries and utility to transition to higher tariffs

LONG TERM

- Create enabling law, policies and regulation that promote private investment in energy and encourage efficiency in supply and consumption
- Assist in rationalizing energy prices and establishing regulatory institutions that promote public participation and transparency
- Strengthen energy institutions as they transition from public ownership and operation to their new role
- Directly promote private investment through face-to-face, hands-on workshops bringing private investors, lenders and government decision makers together in an informal environment

APPENDIX



Nigeria

Location: Western Africa, bordering the Gulf of Guinea, between Benin and Cameroon
Geographic coordinates: 10 00 N, 8 00 E
Map references: Africa
Area:
total: 923,770 sq km
land: 910,770 sq km
water: 13,000 sq km
Area—comparative: slightly more than twice the size of California
Land boundaries:
total: 4,047 km
border countries: Benin 773 km, Cameroon 1,690 km, Chad 87 km, Niger 1,497 km
Coastline: 853 km
Maritime claims:
continental shelf: 200-m depth or to the depth of exploitation
exclusive economic zone: 200 nm
territorial sea: 30 nm
Climate: varies; equatorial in south, tropical in center, arid in north
Terrain: southern lowlands merge into central hills and plateaus; mountains in southeast, plains in north

Elevation extremes:
lowest point: Atlantic Ocean 0 m
highest point: Chappal Waddi 2,419 m
Natural resources: petroleum, tin, columbite, iron ore, coal, limestone, lead, zinc, natural gas
Land use:
arable land: 33%
permanent crops: 3%
permanent pastures: 44%
forests and woodland: 12%
other: 8% (1993 est.)
Irrigated land: 9,570 sq km (1993 est.)
Natural hazards: periodic droughts
Environment—current issues: soil degradation; rapid deforestation; desertification; recent droughts in north severely affecting marginal agricultural activities
Environment—international agreements:
party to: Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection
signed, but not ratified: none of the selected agreements

Population: 113,828,587 (July 1999 est.)
Age structure:
0-14 years: 45% (male 25,613,974; female 25,397,166)
15-64 years: 52% (male 30,272,539; female 29,197,611)
65 years and over: 3% (male 1,678,732; female 1,668,565) (1999 est.)
Population growth rate: 2.92% (1999 est.)
Birth rate: 41.84 births/1,000 population (1999 est.)
Death rate: 12.98 deaths/1,000 population (1999 est.)
Net migration rate: 0.31 migrant(s)/1,000 population (1999 est.)
Sex ratio:
at birth: 1.03 male(s)/female
under 15 years: 1.01 male(s)/female
15-64 years: 1.04 male(s)/female
65 years and over: 1.01 male(s)/female
total population: 1.02 male(s)/female (1999 est.)
Infant mortality rate: 69.46 deaths/1,000 live births (1999 est.)
Life expectancy at birth:
total population: 53.3 years
male: 52.55 years
female: 54.06 years (1999 est.)
Total fertility rate: 6.02 children born/woman (1999 est.)
Nationality:
noun: Nigerian(s)
adjective: Nigerian
Ethnic groups: Hausa, Fulani, Yoruba, Ibo, Ijaw, Kanuri, Ibibio, Tiv
Religions: Muslim 50%, Christian 40%, indigenous beliefs 10%
Languages: English (official), Hausa, Yoruba, Ibo, Fulani
Literacy:
definition: age 15 and over can read and write
total population: 57.1%
male: 67.3%
female: 47.3% (1995 est.)

Country name:
conventional long form: Federal Republic of Nigeria
conventional short form: Nigeria
Data code: NI

Government type: republic transitioning from military to civilian rule
Capital: Abuja
note: on 12 December 1991 the capital was officially moved from Lagos to Abuja; many government offices remain in Lagos pending completion of facilities in Abuja
Administrative divisions: 30 states and 1 territory*; Abia, Abuja Federal Capital Territory*, Adamawa, Akwa Ibom, Anambra, Bauchi, Benue, Borno, Cross River, Delta, Edo, Enugu, Imo, Jigawa, Kaduna, Kano, Katsina, Kebbi, Kogi, Kwara, Lagos, Niger, Ogun, Ondo, Osun, Oyo, Plateau, Rivers, Sokoto, Taraba, Yobe
note: the government has announced the creation of six additional states named Bayelsa, Ebonyi, Ekiti, Gombe, Nassarawa, and Zamfara as part of the process of transition to a civilian government
Independence: 1 October 1960 (from UK)
National holiday: Independence Day, 1 October (1960)
Constitution: 1979 constitution still partially in force
Legal system: based on English common law, Islamic law, and tribal law
Suffrage: 18 years of age; universal
Executive branch:
chief of state: Chairman of the Provisional Ruling Council and Commander in Chief of Armed Forces Gen. Abdulsalami ABUBAKAR (since 9 June 1998) will remain chief of state and head of government until 29 May 1999 when President-elect Olusegun OBASANJO will be inaugurated
head of government: Chairman of the Provisional Ruling Council and Commander in Chief of Armed Forces Gen. Abdulsalami ABUBAKAR (since 9 June 1998) will remain chief of state and head of government until 29 May 1999 when President-elect Olusegun OBASANJO will be inaugurated
cabinet: Federal Executive Council
elections: the president is elected by popular vote for no more than two four-year terms; election last held 27 February 1999 (next election to be held NA 2003)
election results: Olusegun OBASANJO (PDP) won the election with NA% of the vote, Olu FALAE (APP-AD) NA%
Legislative branch: bicameral National Assembly consists of Senate (109 seats, three from each state and one from the Federal Capital Territory; members elected by popular vote to serve seven-year terms) and House of Representatives (360 seats, members elected by popular vote to serve seven-year terms)
elections: Senate—last held 20-24 February 1999 (next to be held NA 2006); House of Representatives—last held 20-24 February 1999 (next to be held NA 2006)
election results: Senate—percent of vote by party—NA; seats by party—PDP 61, APP 24, AD 20, other 4; House of Represenitives—percent of vote by party—NA; seats by party—PDP 206, APP 74, AD 68, others 12
note: the National Assembly was suspended by the military government following the military takeover on 17 November 1993; the new civilian government which was elected on 20 February 1999 is expected to be inaugurated on 29 May 1999
Judicial branch: Supreme Court, judges appointed by the Provisional Ruling Council; Federal Court of Appeal, judges are appointed by the federal government on the advice of the Advisory Judicial Committee
Political parties and leaders: political parties, suppressed by the military government, were allowed to form in July 1998; three parties were registered by the Provisional Ruling Council for participation in local, state and national elections; All People's Party or APP [Mahmud WAZIRI]; People's Democratic Party or PDP [Soloman LAR]; Alliance for Democracy or AD [Ayo ADEBANJO]
International organization participation: ACP, AfDB, C (suspended), CCC, ECA, ECOWAS, FAO, G-15, G-19, G-24, G-77, IAEA, IBRD, ICAO, ICC, ICRM, IDA, IFAD, IFC, IFRCS, IHO, ILO, IMF, IMO, Inmarsat, Intelsat, Interpol, IOC, ISO, ITU, MINURSO, MONUA, NAM, OAU, OIC, OPCW, OPEC, PCA, UN, UNCTAD, UNESCO, UNHCR, UNIDO, UNIKOM, UNITAR, UNMIBH, UNMOP, UNMOT, UNPREDEP, UNU, UPU, WCL, WFTU, WHO, WIPO, WMO, WToO, WTrO
Diplomatic representation in the US:
chief of mission: Ambassador Wakili Hassan ADAMU
chancery: 1333 16th Street NW, Washington, DC 20036
telephone: [1] (202) 986-8400
FAX: [1] (202) 775-1385
consulate(s) general: New York
Diplomatic representation from the US:
chief of mission: Ambassador William H. TWADDELL
embassy: 2 Eleke Crescent, Lagos

mailing address: P. O. Box 554, Lagos
telephone: [234] (1) 261-0097
FAX: [234] (1) 261-0257
Flag description: three equal vertical bands of green (hoist side), white, and green

Economy—overview: The oil-rich Nigerian economy continues to be hobbled by political instability, corruption, and poor macroeconomic management. Nigeria's unpopular military rulers have failed to make significant progress in diversifying the economy away from overdependence on the capital intensive oil sector which provides 30% of GDP, 95% of foreign exchange earnings, and about 80% of budgetary revenues. The government's resistance to initiating greater transparency and accountability in managing the country's multibillion dollar oil earnings continues to limit economic growth and prevent an agreement with the IMF and bilateral creditors on a staff-monitored program and debt relief. The largely subsistence agricultural sector has failed to keep up with rapid population growth, and Nigeria, once a large net exporter of food, now must import food. Growth in 1999 may become negative because of continued low oil prices and persistent inefficiencies in the system.
GDP: purchasing power parity—$106.2 billion (1998 est.)
GDP—real growth rate: 1.6% (1998 est.)
GDP—per capita: purchasing power parity—$960 (1998 est.)
GDP—composition by sector:
agriculture: 33%
industry: 42%
services: 25% (1997 est.)
Population below poverty line: 34.1% (1992-93 est.)
Household income or consumption by percentage share:
lowest 10%: 1.3%
highest 10%: 31.4% (1992-93)
Inflation rate (consumer prices): 15% (1998 est.)
Labor force: 42.844 million
Labor force—by occupation: agriculture 54%, industry, commerce, and services 19%, government 15%
Unemployment rate: 28% (1992 est.)
Budget:
revenues: $13.9 billion (1998 est.)
expenditures: $13.9 billion, including capital expenditures of $NA billion (1998 est.)
Industries: crude oil, coal, tin, columbite, palm oil, peanuts, cotton, rubber, wood, hides and skins, textiles, cement and other construction materials, food products, footwear, chemicals, fertilizer, printing, ceramics, steel
Industrial production growth rate: 4.1% (1996)
Electricity—production: 13.78 billion kWh (1996)
Electricity—production by source:
fossil fuel: 60.94%
hydro: 39.06%
nuclear: 0%
other: 0% (1996)
Electricity—consumption: 13.74 billion kWh (1996)
Electricity—exports: 50 million kWh (1996)
Electricity—imports: 0 kWh (1996)
Agriculture—products: cocoa, peanuts, palm oil, corn, rice, sorghum, millet, cassava (tapioca), yams, rubber; cattle, sheep, goats, pigs; timber; fish
Exports: $9.7 billion (f.o.b., 1998)
Exports—commodities: petroleum and petroleum products 95%, cocoa, rubber
Exports—partners: US 35%, Spain 11%, Italy 6%, France 6% (1997 est.)
Imports: $9.8 billion (f.o.b., 1998)
Imports—commodities: machinery, chemicals, transportation equipment, manufactured goods, food and animals
Imports—partners: US 14%, UK 11%, Germany 10%, France 8%, Netherlands 5% (1997 est.)
Debt—external: $32 billion (1998 est.)
Economic aid—recipient: $39.2 million (1995)
Currency: 1 naira (N) = 100 kobo

Exchange rates: nairas (N) per US$1—21.886 (December 1998), 21.886 (1998), 21.886 (1997), 21.895 (1995), 21.996 (1994)
Fiscal year: calendar year

Telephones: 405,100 (1995 est.)
Telephone system: average system limited by poor maintenance; major expansion in progress
domestic: intercity traffic is carried by coaxial cable, microwave radio relay, cellular network, and a domestic communications satellite system with 20 earth stations
international: satellite earth stations—3 Intelsat (2 Atlantic Ocean and 1 Indian Ocean); 1 coaxial submarine cable
Radio broadcast stations: AM 82, FM 32, shortwave 10 (1998 est.)
Radios: 17.2 million (1998 est.)
Television broadcast stations: 1 (government-controlled)
Televisions: 6.1 million (1998 est.)

Railways:
total: 3,557 km
narrow gauge: 3,505 km 1.067-m gauge
standard gauge: 52 km 1.435-m gauge (1995)
note: years of neglect of both the rolling stock and the right-of-way have seriously reduced the capacity and utility of the system; a project to restore Nigeria's railways is now underway
Highways:
total: 51,000 km
paved: 26,000 km (including 2,044 km of expressways)
unpaved: 25,000 km (1998 est.)
note: many of the roads reported as paved may be graveled; because of poor maintenance and years of heavy freight traffic (in part the result of the failure of the railroad system), much of the road system is barely useable
Waterways: 8,575 km consisting of the Niger and Benue rivers and smaller rivers and creeks
Pipelines: crude oil 2,042 km; petroleum products 3,000 km; natural gas 500 km
Ports and harbors: Calabar, Lagos, Onne, Port Harcourt, Sapele, Warri
Merchant marine:
total: 38 ships (1,000 GRT or over) totaling 371,499 GRT/631,425 DWT
ships by type: bulk 1, cargo 13, chemical tanker 3, oil tanker 20, roll-on/roll-off cargo 1 (1998 est.)
Airports: 72 (1998 est.)
Airports—with paved runways:
total: 36
over 3,047 m: 6
2,438 to 3,047 m: 10
1,524 to 2,437 m: 10
914 to 1,523 m: 8
under 914 m: 2 (1998 est.)
Airports—with unpaved runways:
total: 36
over 3,047 m: 1
1,524 to 2,437 m: 1
914 to 1,523 m: 16
under 914 m: 18 (1998 est.)
Heliports: 1 (1998 est.)

Military branches: Army, Navy, Air Force, Police Force
Military manpower—military age: 18 years of age
Military manpower—availability:
males age 15-49: 25,967,281 (1999 est.)
Military manpower—fit for military service:
males age 15-49: 14,890,337 (1999 est.)
Military manpower—reaching military age annually:
males: 1,201,738 (1999 est.)

Military expenditures—dollar figure: $236 million (1999)
Military expenditures—percent of GDP: 0.7% (1999)

Disputes—international: delimitation of international boundaries in the vicinity of Lake Chad, the lack of which led to border incidents in the past, is completed and awaits ratification by Cameroon, Chad, Niger, and Nigeria; dispute with Cameroon over land and maritime boundaries around the Bakasi Peninsula is currently before the International Court of Justice; maritime boundary dispute with Equatorial Guinea because of disputed jurisdiction over oil-rich areas in the Gulf of Guinea
Illicit drugs: facilitates movement of heroin en route from Southeast and Southwest Asia to Western Europe and North America; increasingly a transit route for cocaine from South America intended for European, East Asian, and North American markets

The World Bank Group
Nigeria Overview

History
Nigeria attained independence from Britain in 1960. A succession of military governments have controlled the country for 28 years of its 38 years of independence. In June 1998, General Abdulsalami Abubakar became Head of State following the sudden death of General Sani Abacha, and has promised free elections and a handover to a civilian government on May 29, 1999.
Nigeria is composed of about 250 ethnic groups, with diverse languages and religious faiths. The largest ethnic groups are the Hausa-Fulani in the North, the Igbo in the Southeast, and the Yoruba in the Southwest. Regional, ethnic, and religious differences have contributed to great instability, and Nigeria's development will depend on the evolution of a political formula that takes into account the country's diverse characteristics.
Economy and Politics
Nigeria's economy is highly dependent on the oil sector, which accounts for about 50 percent of gross domestic product (GDP) and accounts for 95 percent of the country's foreign exchange earnings. With its large reserve of human and natural resources, Nigeria has the potential to build a highly prosperous economy, to reduce poverty significantly, and to provide the health, education, and infrastructure services its population needs. Despite the country's relative oil wealth, poverty is widespread and Nigeria's basic social indicators place it among the 20 poorest countries in the world.
The Nigerian economy has experienced very low growth in the past few years, despite good economic stabilization policies that have reduced average inflation from over 70 percent in 1994 to under 10 percent in 1998. Political uncertainty, poor governance, corruption, and inefficient state-owned firms in the oil, electricity, and telecommunication sectors have been the main factors contributing to poor economic performance.
Since General Abubakar came to power he has outlined a credible political transition program, removed strictures on political participation and released political prisioners. In addition, General Abubakar has announced steps to revive the economy with emphasis on poverty alleviation programs and privatization of state-owned firms. He has also announced anti-corruption measures such as open competitive tendering for government contracts, elimination of the dual exchange rate, a more transparent system for the importation of petroleum products, and a requirement that all senior military men in government declare their assets.
Nigeria is an important country in West Africa because it accounts for 47 percent of the region's population and 43 percent of the region's GDP. In recent years, Nigeria has exercised a leadership role through the West African peacekeeping force, the Economic Community of West African States Monitoring Group (ECOMOG), which restored peace in Liberia and Sierra Leone.
Development Picture/Donor Coordination
There has been limited donor activity in Nigeria following the annulment of the 1993 presidential elections and the imposition of limited sanctions on Nigeria in 1994 by the United States, the European Union, and the Commonwealth.
The World Bank Group's Role
The World Bank currently supports 13 projects in Nigeria with a total commitment of US$1,039.5 million. The projects are in the areas of primary education; primary health care; water supply; roads; and agricultural research, extension, and technology. Since 1994, the World Bank has drastically scaled back lending to Nigeria from about

US$400 million a year in the late 1980s and early 1990s to US$25 million a year in 1998. Although economic management and project implementation have improved, corruption remains a major obstacle to economic growth. The improvement in Nigeria's relations with the international community and in its economic policies are likely to lead to greater assistance from the World Bank.
The International Finance Corporation (IFC), the Bank Group's private sector lending arm, has committed a total of US$29.86 million in Nigeria. The country is an inactive member of the Multilateral Investment Guarantee Agency (MIGA). The Economic Development Institute (EDI) program in Nigeria focuses on rural development, water supply, and the environment.

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United States
Energy Information Administration
August 1999
Nigeria

Nigeria, an Organization of Petroleum Exporting Countries (OPEC) member, is important to world energy markets because it is one of the world's largest oil exporters. The country is a major oil supplier to the United States and Western Europe. Nigeria was the 5th largest supplier of crude oil to the United States in 1998.
Note: information contained in this report is the best available as of August 1999 and is subject to change.

GENERAL BACKGROUND

On May 29, 1999, Olusegun Obasanjo was sworn in as Nigeria's president, returning Nigeria to civilian rule.
The Nigerian economy is largely dependent on its oil sector, which accounts for nearly 50% of Nigeria's gross domestic product (GDP) and 95% of the country's foreign exchange earnings. Nigeria's real GDP expanded by an average 2.3 % annually from 1993-1996, by 3.9% in 1997, by 2.3% in 1998 and was projected to expand by 4.2% in 1999. It was announced on January 25, 1999, that Nigeria and the International Monetary Fund (IMF) had reached an agreement on an IMF-monitored economic program. The program, which was approved by the IMF board in February, could pave the way for negotiations on debt rescheduling and the resumption of World Bank funding.
Several structural changes have been made to Nigeria's economy. The dual exchange rate, an issue that has troubled creditors and the IMF, was abolished (effective January 1, 1999), the commercial functions of the Central Bank of

Nigeria (CBN) were to be transferred to merchant and commercial banks, and the CBN's autonomy in the formulation and implementation of monetary policies was restored.

OIL

Nigeria contains estimated proven oil reserves of 22.5 billion barrels. Almost all of these reserves are found in relatively simple geological structures along the country's coastal Niger River Delta. The majority of this oil lies in about 250 small fields, most of which hold reserves of less than 50 million barrels each. At least 200 other fields are known to exist and contain undisclosed reserves. The country's crude oil reserves have gravities that range between 21° API and 45° API. Nigeria's main export crude blends are Bonny Light (37° API) and Forcados (31° API). Approximately 65% of the crude oil produced in Nigeria is light (35° API or higher) and sweet (low sulfur content). Nigeria hopes to nearly double its oil reserves to 40 billion barrels by 2010, but field operators, who mostly are involved in joint ventures (JVs) majority-controlled by the Nigerian National Petroleum Corporation (NNPC), have postponed exploration and field development because the NNPC has failed to pay its share of capital spending on time.

In June 1999, President Obasanjo appointed OPEC Secretary-General Rilwanu Lukman to be his advisor on petroleum and energy affairs. The president also chose Jackson Gaius-Obaseki to head the NNPC. Gaius-Obaseki had previously held several lower-level positions with the NNPC.

Exploration and Development (Upstream)

Nigeria's military government, just before its handover of power to civilian rule, created 25 new deepwater oil concessions. The blocks, designated OPL 317-325 and OPL 251-265 are located in waters with depths that range between 6,600-16,500 feet. An official government statement issued on July 6, 1999 announced the cancellation of 16 exploration blocks awarded by the previous government of General Abubakar. A majority of the awards (11 were in Nigeria's deepwater area) were granted to local firms, which were believed to have ties to active and former senior military officials. President Obasanjo has established a commission to examine the propriety of all government contracts awarded in 1999 prior to his administration's assumption of power.

While the onshore and shallow offshore exploration/production activities are undertaken mainly by JVs, deepwater and frontier exploration utilize production-sharing contracts (PSCs). In a typical PSC, the operator covers all exploration and development costs. If oil is discovered the operator pays tax and royalties to the government when it starts to produce. The PSC terms in Nigeria are attractive enough to spur deepwater exploration by several major oil companies. Estimates of recoverable oil reserves in Nigerian deepwater areas range from eight to nearly 20 billion barrels. Several discoveries have been made in Nigeria's deepwater. In 1996, Royal Dutch/Shell (Shell) announced the Bonga discovery. Bonga, located on block OPL 212, had initial tests of 3,000 barrels per day (bbl/d). Estimates of Bonga's reserves range from 600 million to 1 billion barrels, with a production capability of 350,000 bbl/d. Shell also had a smaller discovery, Ngolo, on block OPL 219 in 1997. Ngolo has an estimated 100 million barrels of reserves . Shell's (55% interest) partners on both blocks are Exxon (20%), ENI/Agip (Agip) (12.5%) and Elf Aquitaine (Elf) (12.5%).

In 1996, Agip (40% interest) also had a 4,800 bbl/d discovery, Abo, on OPL 316. Production from Abo is expected to start in 2001. Agip's partners on OPL 316 are BP Amoco (35%) and Exxon (25%). In January 1999, local firm Famfa Oil, and its technical partner, Texaco, announced the Agabami discovery on OPL 216. The field, located about 113 kilometers (70 miles) offshore, is believed to contain several hundred million barrels of recoverable oil. Norway's Statoil has decided to remain active in Nigeria after a discovery it made on OPL 218. The discovery, named Nnwa, is believed to hold several hundred million barrels of oil. BP Amoco, which was the joint operator with Statoil on blocks OPL 217 and OPL 218, has decided to sell its share in those blocks and five others located in Nigeria's deepwater.

Exploration and field development continues in Nigeria's traditional oil area, onshore and in the shallow waters of the Niger Delta, as well as in other regions. Shell, Chevron, and Elf currently are exploring on 21 blocks located in the central and northern Nigerian states of Gombe, Plateau, Bauchi and Adamawa. Shell announced in February 1999, that it plans to invest $8.5 billion over the next five years in the development of offshore oil fields. The proposal is the largest industrial investment ever in sub-Saharan Africa.

Border Disputes

Both Cameroon and Nigeria have claimed the Bakassi peninsula, a 1,000-square-kilometer (400-square-mile) area located in the Gulf of Guinea believed to contain significant reserves of oil. Several oil discoveries have been made on the peninsula and its adjoining waters, but at present operations in the disputed area have been suspended. In February 1994, Cameroon submitted the dispute to the International Court of Justice (ICJ) for settlement, and Nigeria later followed with its own suit to the ICJ. The ICJ began formal hearings in March 1998, but a decision had yet to be reached by mid-1999.

The Nigerian government has questioned Equatorial Guinea's sole ownership of the Zafiro field (Block B). At issue is whether Zafiro is a separate field, or part of an oil structure that straddles the territorial waters of both countries. U.S.-based Mobil started oil production from the field in September 1996 under a contract with Equatorial Guinea. Elf holds the lease on the Nigerian block, OML 102, which lies just 3.5 kilometers (2 miles) north of the Zafiro field. Elf and Nigeria claim that seismic data of the field confirms that it extends into Nigerian territory. Nigeria has called for a determination of the boundary between the two nations and for the establishment of joint-field development. In 1998, Elf drilled two wells on OML 102 and announced a discovery called Ekanga. Equatorial Guinea maintained that the Ekanga wells were drilled in their territorial waters in Block B. Negotiations between Nigeria and Equatorial Guinea have met with little success so far. In June 1999, Equatorial Guinea petionted the ICJ to intervene in the case being heard involving Nigeria and Cameroon. Equatorial Guinea's reason for this action was "to protect [its] legal rights in the Gulf of Guinea by all legal means" and "to inform the Court of Equatorial Guinea's legal rights and interests so that these may remain unaffected as the Court proceeds to address the question of the maritime boundary between Cameroon and Nigeria". Equatorial Guinea also stated that "although it would be open to the three countries to request the Court not only to determine the Cameroon-Nigeria maritime boundary but also to determine Equatorial Guinea's maritime boundary with these two States, Equatorial Guinea has made no such request and wishes to continue to seek to determine its maritime boundary with its neighbors by negotiation."

Production

Nigerian crude oil production has averaged 2.012 million bbl/d for the first five months of 1999, down from 2.043 million bbl/d in 1998 and 2.317 million bbl/d in 1997. Nigeria's OPEC crude oil production quota was raised from 1.865 million bbl/d to 2.042 million bbl/d at the end of 1997. In March 1998, Nigeria agreed with other OPEC members and some non-OPEC producers to cut production to stabilize world oil prices. Nigeria, which was estimated to be producing 2.26 million bbl/d at the time of the agreement, pledged to decrease production by 125,000 bbl/d. On June 24, 1998, OPEC held a full ministerial meeting to discuss further oil production cuts in light of the lowest oil prices seen since 1986. At this meeting OPEC agreed to cut, including cuts OPEC made in their March meeting, a combined 2.6 million bbl/d from February 1998 levels. Under this arrangement, Nigeria cut an additional 100,000 bbl/d of production. On March 23, 1999, OPEC (excluding Iraq) agreed to cut an additional 1.7 million barrels per day on top of the cuts made in the two agreements last year. These cuts are to be from the previous quotas, after making an adjustment for Iran. However, since the previous two agreements were only partially implemented (between 65% and 78% over the last 5 months of 1998), the levels in which these cuts are to be made from do not represent actual cuts for most countries. Nigeria's quota is now 1.89 million bbl/d, and Nigeria's production cuts total 373,000 bbl/d.

President Obasanjo has announced plans to increase Nigeria's oil production by approximately 50% over the next four years. He said the aim was to boost output from two million to three million barrels of crude oil per day by providing better funding to develop new oil and gas fields.

Ethnic Unrest

Ethnic disturbances have recently increased in Nigeria's Niger Delta region. An estimated 700 people have been killed in clashes between several tribal groups and security forces since President Obasanjo took office. Oil production operated by the foreign firms in the region has also been disrupted on several occasions. President Obasanjo announced that a bill for the creation of the Niger Delta Commission (NDC) would be presented to the Nigerian parliament for approval. The NDC would supervise development and government spending in the area, and the foreign oil-firms have agreed to help finance the NDC.

Funding

A major problem facing Nigeria's upstream oil sector has been funding from the government. Under existing JV projects, the NNPC shares costs with its foreign partners. Funding to the NNPC from the Finance Ministry has been below budgeted levels since 1993. The decrease in funding has led to a growth in arrears owed to foreign JV partners, and to a decrease in their exploration/development activities.

In the 1999 budget, submitted before the Abubakar regime ceded power, funding for the JVs has been slashed to $2 billion. The budget did include tax credits and investment incentives specific to the oil and gas sectors. The government also said that it would seek to diversify funding for the industry.

The government has approved an alternative-funding scheme for Shell's EA oil field. The projects' private partners will finance the $400 million EA development. The NNPC's share of costs will be carried by Shell, and will be repaid as EA starts production. Elf is also seeking non-traditional funding for development of the Amenam field. Development costs for the field, which has an estimated 400 million barrels of recoverable oil, are projected at $1 billion.

Exports

The majority of Nigeria's crude exports are destined for markets in the United States and Western Europe. Asia is

increasingly becoming a destination for Nigerian crude, but economic difficulties in the region have hindered oil demand growth. Nigerian crude exports to the United States averaged 689,000 bbl/d in 1998 (7.9% of U.S. imported crude oil). Nigeria was the 5th largest crude exporter to the United States in 1998 behind Saudi Arabia, Venezuela, Mexico and Canada. For the first 5 months of 1999, Nigerian crude exports to the United States have averaged 682,000 bbl/d, making Nigeria the 6th largest source of crude supplied to the United States.

The NNPC announced on July 2, 1999 that it was canceling all crude oil term contracts effective at the end of September 1999. The cancellations were seen as an attempt by the government to limit the role of trading companies in Nigerian crude oil sales. The government wishes to increase the transparency of crude oil sales and reduce the reliance on middlemen by boosting direct sales to refiners. Rilwanu Lukman, advisor to President Obasanjo on petroleum and energy affairs, stated that refiners wishing to purchase crude contracts would no longer have to pay the commissions that were used to seal past agreements.

Refining and Downstream

Nigeria's four refineries have a combined nameplate capacity of over 438,750 bbl/d, but problems including sabotage, fire, poor management and lack of turn-around maintenance (TAM) sharply decrease actual output. Refinery problems have led to massive fuel shortages throughout Nigeria. Shortages of refined products have forced the NNPC to import products, and the government has authorized import increases to help ease shortages. Deregulation of petroleum product imports was unveiled under the new budget plan. Deregulation will end the NNPC's monopoly on petroleum product imports. Petroleum product smuggling for resale to neighboring countries (Nigerian prices are highly subsidized) has exacerbated the country's fuel shortage.

TAM contracts for Nigeria's refineries have been signed with several firms. Total Fina signed an agreement in early 1998 to perform TAM on the 110,000-bbld Kaduna refinery. Total Fina announced in February 1999 that the refinery was back in operation. The Nigerian government has decided to review the $215 million contract that was awarded to Total Fina for the repairs of the Kaduna refinery. The contract, which was awarded by the Abacha regime, may be reviewed under a newly established panel that will review government contracts stretching back to before 1976. President Obasanjo told the 12-member advisory panel, at its inauguration in the capital Abuja, that the period it would cover had been extended backwards to before 1984 when military rulers toppled the previous elected government. In September 1998, the TAM contract for the Port Harcourt refinery was awarded to Shell. In May 1999, Nigeria awarded a repair and refurbishment contract for its 125,000 bbl/d-refinery in Warri to a consortium of Canadian, Dutch and U.S. firms. The contract was awarded to Canada's Ramboil, Dietsman Comerint of the Netherlands and Litwin of the United States.

NATURAL GAS

Nigeria contains an estimated 124 trillion cubic feet (Tcf) of proven natural gas reserves (10th largest in the world). Ultimate associated and non-associated gas reserves may reach as high as 300 Tcf. Associated gas production is concentrated on fields (approximately 150) located onshore and in swampy areas of the Niger River Delta. Due to a lack of gas utilization infrastructure, Nigeria flares 75% of the gas it produces and re-injects 12% to enhance oil recovery. Although high, this is significantly below the over 98% flared in 1971. Nigeria has set the year 2010 as its target for achieving zero flaring of natural gas. The 1999 Nigerian budget included incentives for the production and usage of gas. Guidelines for the pricing of gas, to the national gas utility Nigerian Gas Company (NGC), a subsidiary of the NNPC, and end-users, were also included in the incentive package. Several of the oil JVs have plans for using the gas currently flared.

Mobil and the NNPC began production of NGLs (natural gas liquids) from their Oso-NGL project in July 1998. Natural gas from the offshore Oso field, located 42 kilometers (26 miles) south of the Qua Iboe terminal, is piped to a fractionation plant where it is processed into propane, butane and pentane. The LPG production is currently 40,000 bbl/d with a capacity of 50,000 bbl/d. LPG from the $850 million-facility is currently destined for export. Mobil has a 51% interest in the Oso project and the NNPC holds the remaining interest.

The Escravos gas project (EGP), in which the NNPC holds a 60% share and Chevron a 40% share, is another project Nigeria is undertaking in order to better utilize its natural gas reserves. The first phase of the EGP was completed in six years at a cost of $570 million. The EGP currently processes 165 million cubic feet per day (Mmcf/d) of associated gas (from the Okan and Mefa fields). The EGP's second phase is currently under construction and it is expected to come online by the end of 1999. The third phase of the EGP, currently undergoing engineering and design with a projected start-up in 2004, will gather the remainder of the gas flared by the Chevron-operated oil fields.

Gas from the second phase of the EGP will be used to supply Benin, Togo and Ghana through the West African Gas Pipeline (WAGP). In January 1995, the Nigerian government first announced plans to build the WAGP to the three countries. Chevron officials stated that the 998 kilometers (620 miles) of WAGP would be totally offshore. The $400 million WAGP would initially transport 100-150 Mmcf/d of gas to Ghana Benin and Togo beginning as early

as 2002. Six companies were named as joint developers of the WAGP -- Chevron, Shell, NNPC, Ghanaian National Petroleum Corp., Societe Beninoise de Gaz, and Societe Togolaise de Gaz. A feasibility study for the WAGP was completed in the first quarter of 1999. World Bank studies have shown that the countries could save about $500 million in primary energy costs over 20 years. Chris Miller, Chevron's project manager for the WAGP, stated that the current proposed volumes of 100-150 Mmcf/d could rise four or fivefold over the next 20 years.

In April 1998, Chevron and Sasol, the South African energy, synfuels and petrochemicals company, signed an agreement to construct a 20,000-bbl/d gas-to-liquids (GTL) plant in Nigeria. The GTL plant, which would use gas from the third phase of the EGP, would process natural gas to synthetic crude oil. The synthetic crude would then be further processed into petroleum products, primarily sulfur-free diesel.

The Shell-operated JV also has several projects to harness flare-gas. The Odidi Associated Gas Gathering project, is anticipated to come online in the fourth quarter of 2000 and will gather 80 Mmcf/d of gas now flared at five Shell-operated flow stations. The gas will be fed into the NGC's Escravos-Lagos pipeline system. A similar project is being developed at Shell's Nembe flow station. The Nembe project is scheduled to be completed by the third quarter of 2000.

Nigeria's most ambitious gas project is the $3.7-$3.8 billion LNG (liquefied natural gas) facility being constructed on Bonny Island. When completed in mid-1999, the facility will be able to process 7.15 billion cubic meters (252.4 billion cubic feet (Bcf)) annually of LNG. The consortium developing the project, Nigeria Liquefied Natural Gas Corporation (NLNG) is comprised of the NNPC (49%), Shell (25.6 %), Elf (15%), and Agip (10.4%). Initially the facility will be primarily supplied from dedicated gasfields, but the NLNG has stated that half of the input gas will be associated (currently flared) gas within a few years. Several customers have signed long-term purchase agreements with NLNG: the Italian electric utility, ENEL (49% of the production volume); Spain's Enagas (22%); Turkey's Botas (17%); Gaz de France (7%); and Transgas of Portugal (5%). The first LNG deliveries to customers are expected to commence in October 1999.

Consortium members of NLNG confirmed in mid-1999 that a third LNG production train with an annual capacity of 3.7 billion cubic meters (130.6 Bcf) will be built, increasing NLNG's overall LNG processing capacity to 10.85 billion cubic meters (383 Bcf) per year. Deliveries from the third LNG train are scheduled to begin in the fourth quarter of 2002. NLNG announced that Enagas had signed a 21-year agreement to purchase over 70% of the third LNG train's output. Transgas signed an agreement in June 1999 to purchase an additional 1 billion cubic meters (35.3 Bcf) per year of LNG from the third train. With this agreement, NLNG has pre-sold all output from the third LNG train. When the third train is operational, it will be possible to run the entire LNG facility on associated gas.

ELECTRICITY AND COAL

Nigeria currently has 5,881 megawatts (MW) of installed electric generating capacity. Nigeria plans to expand its electric generation, transmission, and distribution systems. Approximately 43% of Nigeria's population currently has access to electricity, but the National Electric Power Authority (NEPA) plans to boost this share to 85% by 2010. NEPA's plan would call for an additional 15,000 kilometers (9,000 miles) of transmission lines, 16 new power plants, and new distribution and marketing facilities. The Nigerian government is hoping to increase foreign participation in the electric power sector, and it is considering offering Build, Own, and Operate (BOO) projects. Negotiations are currently underway between Mobil and the NEPA over construction of a 350-MW gas-fired power plant in Rivers State in southern Nigeria. The government is also considering the privatization of existing facilities.

From March 1999 version: General Abubakar approved the rehabilitation of eight power plants. Power minister Bello Suleiman stated that the eight plants were currently generating a combined 2,800 MW, but that their combined capacity was 5,900 MW. The Nigerian government is hoping to increase foreign participation in the electric power sector, and it is considering offering Build, Own, Operate (BOO) projects. Negotiations are currently underway between Mobil and the NEPA over construction of a 350 MW gas-fired power plant in Rivers State in southern Nigeria. Privatization of all or portions of NEPA are also being considered. General Abubakar stated that the government was considering a 40% sell-off of the state-controlled electricity and telecommunication enterprises with foreign management control assuming operations.

The Nigerian Coal Corporation (NCC) plans to expand operations at its Owukpa mines. The mines, located in eastern Nigeria, had annual production of nearly 0.55 million short tons (mmst) in the 1950's. Nigerian coal production had declined to 0.11 mmst by 1995. The three mines at Owukpa currently have an annual production capacity of 0.33 mmst. The NCC is planning to develop the coal mining sector by offering concessions to local and foreign investors. Investors will be required to finance mine development and pay the equivalent of 10%-15% of mine output to the NCC in cash or coal.

COUNTRY OVERVIEW

President: Olusegun Obasanjo
Independence: October 1, 1960 (from United Kingdom)
Population (1998E): 110.5 million
Location/Size: Western Africa, bordering the Atlantic Ocean, between Cameroon and Chad (on the east); and Benin and Niger (on the west and north)/923,770 square kilometers (356,700 square miles), slightly more than twice the size of California **Major Cities:** Abuja (capital), Lagos, Ibadan, Kano Kaduna, Port Harcourt
Languages: English (official), Hausa, Yoruba, Ibo (Igbo), Fulani, and over 250 other languages
Ethnic Groups: Hausa, Fulani, Yoruba, Ibo, and over 200 others
Religion (1998E): Islam (50%), Christianity (40%), traditional beliefs (10%)
Defense (8/96): Army (62,000), Navy (5,600), Air Force (9,500)

ECONOMIC OVERVIEW

Finance Minister: Malam Adamu Ciroma
Currency: Naira
Market Exchange Rate (6/23/99): US$1 = 92.83 Naira
Gross Domestic Product (1998E): $48.2 billion
Real GDP Growth Rate (1998E): 2.3% **(1999E):** 4.2%
Inflation Rate (1998E): 10.2% **(1999E):** 20.5%
Current Account Balance (1998E): $4.8 billion **(1999E):** $5.5 billion
Major Trading Partners: United States, EU
Merchandise Trade Balance (1998E): $9.2 billion **(1999E):** $10.2 billion
Merchandise Exports (1998E): $16.9 billion
Merchandise Imports (1998E): $7.7 billion
Major Export Products: Crude oil, cocoa, rubber, timber, manufactured goods
Major Import Products: Petroleum products, food, machinery and equipment, manufactured goods
Oil Export Revenues (1998E): $9.2 billion
Oil Export Revenues/Total Export Revenues (1998E): 90%
Total External Debt (1998E): $36.5 billion

ENERGY OVERVIEW

Petroleum Advisor: Rilwanu Lukman
Minister of Power and Steel: Bola Ige
Minister of Solid Minerals: Musa Gwadabe
Proven Oil Reserves (1/1/99): 22.5 billion barrels
Oil Production (1998E): 2.158 million barrels per day (bbl/d) of which 2.043 million bbl/d was crude oil
OPEC Crude Production Quota (beginning April 1, 1999): 1.885 million bbl/d
Oil Production Capacity (1998E): 2.4 million bbl/d
Oil Consumption (1998E): 295,000 bbl/d
Net Oil Exports (1998E): 1.9 million bbl/d
Crude Refining Capacity (1/1/99): 438,750 bbl/d
Major Crude Oil Customers (1998): U.S., Western Europe
Natural Gas Reserves (1/1/99): 124 trillion cubic feet
Natural Gas Production (1997E): 194 billion cubic feet (Bcf)
Natural Gas Consumption (1997E): 194 Bcf
Electric Generation Capacity (1/1/97): 5.9 gigawatts
Electricity Generation (1997E): 13.575 billion kilowatthours

ENVIRONMENTAL OVERVIEW

Minister of Environment: Hassan Adamu
Total Energy Consumption (1997E): 0.9 quadrillion Btu* (0.2% of world total energy consumption)
Energy-Related Carbon Emissions (1997E): 27.7 million metric tons of carbon (0.4% of world carbon emissions)
Per Capita Energy Consumption (1997E): 7.3 million Btu (vs U.S. value of 351.9 million Btu)
Per Capita Carbon Emissions (1997E): 0.2 metric tons of carbon (vs U.S. value of 5.6 metric tons of carbon)
Energy Intensity (1997E): 23,200 Btu/ $1997 (vs U.S. value of 11,600 Btu/ $1997)
Carbon Intensity (1997E): 0.75 metric tons of carbon/thousand $1997 (vs U.S. value of 0.18 metric tons/thousand $1997)
Sectoral Share of Energy Consumption (1996E): Residential (75.8%), Industrial (16.5%), Transportation (6.6%), Commercial (1.1%)

Sectoral Share of Carbon Emissions (1996E): Transportation (47.8%), Industrial (33.0%), Residential (15.7%), Commercial (3.6%)
Fuel Share of Energy Consumption (1997E): Oil (69.8%), Natural Gas (23.7%), Coal (0.2%)
Fuel Share of Carbon Emissions (1997E): Natural Gas (58.0%), Oil (41.9%), Coal (0.2%)
Renewable Energy Consumption (1996E): 2,688 trillion Btu*
Number of People per Motor Vehicle (1997): 83.3 (vs U.S. value of 1.3)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified August 29th, 1994). Not a signatory to the Kyoto Protocol
Major Environmental Issues: Soil degradation; rapid deforestation; desertification; recent droughts in north severely affecting marginal agricultural activities
Major International Environmental Agreements: A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection and Whaling
* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

OIL AND GAS INDUSTRIES

Organizations: The Nigerian National Petroleum Corporation (NNPC) manages the state-owned oil industry. NNPC controls majority interests (between 55%-60%) in all joint ventures with foreign oil companies. The NNPC holds 49% in the Nigeria Liquefied Natural Gas (NLNG) Company.
Major Foreign Oil Company Involvement: British Gas, British Petroleum-Amoco, Chevron, Conoco, Deminex, Elf Aquitaine, ENI/Agip, Exxon, Mobil, Pan Ocean, Royal Dutch/Shell, Statoil, Sun Oil, Tenneco, Texaco, Total Fina
Major Oil Fields: Cawthorn Channel, Edop, Ekulama, Escravos Beach, Forcados Yorki, Jones Creek, Meren, Nembe, Okan, Oso, Ubit
Refineries (nameplate capacity bbl/d) (1/1/99): Port Harcourt-Rivers State (150,000), Warri (118,750), Kaduna (110,000), Port Harcourt-Alesa Eleme (60,000),
Major Terminals: Bonny Island, Brass River, Escravos, Forcados, Odudu, Pennington, Qua (Kwa) Iboe

Monthly Energy Chronology January 1998 to August 1999

January 1998

January 26 Delegates from OPEC's Ministerial Monitoring Committee hold an emergency one-day meeting to discuss falling oil prices. The delegates agree that OPEC's crude oil output is above the 27.5 million barrels per day ceiling by at least 500,000 barrels per day, but less than 1 million barrels per day. The delegates also say that there is little OPEC can do to lift oil prices soon outside of recommending strict adherence to production quotas or possibly cutting production. (DJ)

February 1998

March 1998

March 6 French petroleum company Total SA signs an agreement with the Nigerian National Petroleum Corporation to rehabilitate the Kaduna refinery in northern Nigeria. The 110,000- barrel-per-day refinery has been shut since July 1997. Currently, the 125,000-barrel-per-day unit in Warri is the only functional refinery in the country. All other refineries have been shut for safety reasons. The rehabilitation is estimated to cost around $200 million, and some units at the refinery may resume production in six months. (DJ)
March 22 127 Shell workers and contractors are detained when local communities took control of six flow stations as part of a local protest against the relocation of local government headquarters. 210,000 barrels per day of production was shut in and loadings at the Bonny and Forcados terminals were curtailed. The flow stations seized were Egwa 1 and 2, Odidi 1 and 2, and Jones Creek in the western division and Nembe which is located in the eastern division. (R) (DJ)
March 24 After a dispute with Mobil Corporation, Elf Nigeria, a subsidiary of France's Elf Aquitaine SA, receives approval from Nigeria's Department of Petroleum Resources to develop the Amenam oil field. The field, located in Elf's OML99 area, contains estimated reserves of 400 million barrels of oil and is expected to produce 90,000 barrels per day. In a related story, France's Total SA and Brazil's Petrobras have been awarded block OPL246 in Nigeria's deep offshore zone. Some estimates put the block's reserves at one billion barrels of oil. (DJ)
March 31 The Organization of Petroleum Exporting Countries (OPEC) releases an official communique from its 104th (extraordinary) meeting convened in Vienna, Austria, on March 30, 1998. The communique states that member countries have agreed to voluntary cuts from each country's current production levels in an attempt to boost oil prices. OPEC has agreed to cuts totaling 1.245 million barrels per day effective April 1, 1998. The cuts, in barrels per day, break down as follows: Algeria 50,000; Indonesia 70,000; Iran 140,000; Kuwait 125, 000; Libya 80,000; Nigeria 125,000; Qatar 30,000; Saudi Arabia 300,000; United Arab Emirates 125,000; and Venezuela 200,000. In addition, non-OPEC oil-producing countries Mexico, Oman, and Yemen have agreed to cut production by 100,000, 30,000, and 20,000 barrels per day, respectively. Moreover, a third non-OPEC country, Norway, the world's third largest oil exporter, has pledged to reduce its oil production by 3 percent, or approximately 100,000 barrels per day. However, Norway's cuts will not take effect until mid-April 1998. (Cuts are from February production based on secondary sources.) (DJ) (WSJ)(NYT)

April 1998

April 15 Chevron and Sasol have reached an agreement to begin design and engineering for the construction of a 20,000 barrels per day gas-to-liquids products plant in Nigeria. The proposed plant would first convert natural gas into synthetic crude oil, which would be further processed into various petroleum products. The agreement will incorporate proprietary technologies from the two companies (DJ)
April 16 A joint venture between Chevron Corporation and the Nigerian National Petroleum Corporation begins production from the Gbokoda oil field, located on the western Niger Delta. Crude oil production is expected to reach 40,000 barrels per day (bbl/d) by the end of 1998, and by 2000, the field's output will increase the joint venture's total production by more than 85,000 bbl/d. (DJ)
April 28 Nigeria's five legal national political parties decide to adopt General Abacha as a consensus candidate for the upcoming presidential elections scheduled for August. (AP)
April 29 A military court sentenced General Oladipyo Diya, the former vice-chairman of the Provisional Ruling Council (PRC), and five others to death for allegedly plotting the overthrow of General Sani Abacha. In all, 30 people were tried in connection with the alleged December coup plot. Four received life sentences, another four

were given jail terms between two and 14 years, one person was sentenced to an unspecified term, and 15 others were acquitted. (DJ)

April 30 Four Shell Nigeria flow stations in the Western Niger Delta were closed by protesting youths from the local community, shutting in a total of 42,000 barrels per day of Forcados crude. The flow stations affected are Odidi 1 and 2, and Egwa 1 and 2. The closure of the flow stations is not expected to significantly affect Shell as it had already cut back production elsewhere to comply with Nigeria's commitment under OPEC (the Organization of Petroleum Exporting Countries) to scale back production and so will be able to adjust production at other facilities to compensate. Protesters close a fifth flow station, Batun, on the following day increasing the total shut in volume to 50,000 barrels per day. (DJ)

May 1998

May 11 In March 1998, the Organization of Petroleum Exporting Countries (OPEC) and several non-OPEC countries agreed to crude oil production cuts, beginning April 1, 1998, in an attempt to boost sagging world oil prices. Iraq was the only OPEC member excluded from the deal because its oil exports are conducted under the United Nations oil-for-food program. A *Dow Jones* poll of industry observers indicates that OPEC's April 1998 crude oil output, including Iraq, was 27.995 million barrels per day, down 865,000 barrels per day from March 1998. A second report from the Paris-based International Energy Agency (IEA) indicates that OPEC's April 1998 crude production, including Iraq, was 27.95 million barrels per day (bbl/d), down 800,000 bbl/d from the March 1998 rate. The *Dow Jones* poll shows that, since February 1998, OPEC, excluding Iraq, has cut production by 1.117 million bbl/d, while IEA reports that production, excluding Iraq, has dropped by 1.03 million bbl/d over the same period. These declines are between 83 and 90 percent of the 1.245 million bbl/d of production cuts agreed to by OPEC at the end of March 1998. (DJ)

May 14 Shareholders of Mobil Corporation reject a proposal that would prevent the company from investing in countries that violate human rights. The proposal, presented at the company's annual shareholders meeting, was offered by a group opposed to Mobil's investment in Nigeria. Mobil Chairman Lucio Noto warned shareholders that if Mobil was forced out of Nigeria, other firms would step in to take over Mobil's operations. The proposal, which was voted down by shareholders, would have required Mobil to withdraw from any country that has a pattern of violating human rights or that has a government that is illegitimate. (R)

May 19 Nigerian soldiers began enforcing strict fuel quotas in Lagos, where acute gasoline shortages have sparked riots and panic buying. Authorities began a new rationing system permitting vehicles with license plates beginning with an even number to purchase fuel on Tuesdays, Thursdays and Saturdays while odd-numbered licenses can buy on Mondays, Wednesdays and Fridays. Diplomatic, commercial, and essential government vehicles are exempt. (DJ) (CNN)

May 25 About 200 armed youths board and seize Chevron's Parabe platform (approximately nine miles offshore), and take more than 200 Chevron employees and contractors hostage. On May 28, three days after the siege begun, Nigerian law enforcement officials board the platform. In the ensuing scuffle, two protesters are killed, but other members of the group flee the platform with seven hostages. The hostages are released four days later. (DJ)

June 1998

June 8 The death of Nigeria's leader, General Sani Abacha, was announced on June 8, 1998. A government issued statement did not say how Abacha died, but various sources attributed his death to a heart attack. (NYT) (DJ) (R) (BBC)

June 9 General Abdulsalam Abubakar, the former defense chief of staff, was chosen to succeed Abacha as chairman of the Provisional Ruling Council. Abubakar pledges to restore civilian rule to Nigeria. (R)

June 15 General Abubakar frees nine political prisoners, including former head of state General Olusegun Obasanjo. Moshood Abiola, apparent winner of the 1993 presidential elections, was not listed among those to be freed. (BBC) (R)

June 16 Shell Nigeria shuts in 129,000 barrels per day of Bonny crude oil output due to a combination of community unrest in the Nembe and Odeama regions of Nigeria and a pipeline leak near the Nun River flow station. Shell has declared *force majeure* effective June 19, 1998, through the end of the month, affecting a total of six Bonny crude cargoes. The cargoes are expected to be delayed for one to two days. (DJ)

June 18 Shell Nigeria reopens four of five Bonny crude oil flow stations in the Nembe and Odeama Creek regions. The flow stations were shut on June 8, 1998, due to local community unrest. A spokesman for the company says that resumption of operations at the flow stations means that the *force majeure* announced on June 16, 1998, for the rest of June, will only cause a delay of one day to cargo loadings. Six cargoes will be affected by the delay. (DJ)

June 24 The Organization of Petroleum Exporting Countries (OPEC) agrees, at its 105th ministerial conference, to another round of oil production cuts. In recent weeks oil prices have fallen to their lowest levels in more than a decade. OPEC members have agreed to cut production by 1.355 million barrels per day (bbl/d), effective July 1, 1998, bringing the group's total reductions since March 1998 to 2.6 million bbl/d. Together with promises from non-OPEC nations such as Russia, Oman, and Mexico, world oil producers have pledged to cut worldwide production by approximately 3.1 million bbl/d. (WP) (WSJ) (NYT)
June 25 British Foreign Office junior minister Tony Lloyd, on behalf of the European Union, and Emeka Anyaoku, Secretary-General of the Commonwealth, arrive in Nigeria for talks on normalizing relations. Both men commend Abubakar's release of political prisoners and his moves to restore democracy. During this time the release of an additional 17 prisoners is ordered, but Abiola remains confined. (BBC) (R)
June 30 United Nations Secretary-General Kofi Annan arrived in Nigeria to begin talks with General Abubakar, and Annan meets with Abiola on the following day. (BBC)

July 1998

July 2 Annan announces that Nigeria's government had agreed to release all remaining political prisoners, including Abiola, but a timetable for the release is not established. Although exact figures are not known, it is estimated that as many as 200 political prisoners remain jailed in Nigeria. Annan also indicated that Abiola would no longer insist on claiming the presidency, and he would work toward a smooth transition to democracy. (BBC) (R)
July 7 Moshood Abiola falls ill while meeting a United States delegation, led by undersecretary of state Thomas Pickering, and assistant secretary of state for African affairs Susan Rice. Abiola is rushed to the hospital, but later dies of an apparent heart attack. The news of Abiola's death sparked rioting in Lagos, Ibadan, and Abiola's hometown of Abeokuta. At least 19 are known dead, but unconfirmed reports place the death toll as high as 60. General Abubakar appeared on Nigerian television the following day to appeal for calm during these "critical and trying times." Abubakar also announced that a team of international pathologists will perform an autopsy "to establish the actual cause of his (Abiola's) death". (BBC) (R)
July 8 General Abubakar dissolved the Federal Executive Council, Nigeria's cabinet. The PRC, the core of Nigeria's current government leadership remained intact. A date for the announcement of new cabinet members has not been set, but a government spokesman said General Abubakar will announce the members of the new cabinet "in due course". (BBC) (NYT) (R)
July 10 The PRC announced that it was commuting the death sentence of the former vice-chairman of the PRC, General Oladiypo Diya, and five others. The six were convicted in April 1998 of plotting a coup to overthrow General Abacha. The government says the step was taken as a gesture of goodwill to facilitate the transition process in the country, and in response to local and international calls for clemency. (BBC) (WP)
July 10 Officials of the Nigerian National Petroleum Corporation (NNPC), the state-owned national oil company, announced that the Port Harcourt petroleum refinery would shut down for at least ten days. Technical problems at the power plant that caused the refinery to be shut down have been corrected, but numerous tests must be performed before the refinery can be safely restarted. The refinery was only operating at 40% of its 250,000-barrel per day nameplate capacity before the shutdown. (DJ)
July 11 Abiola is buried, after the body is released to the family by the team of international pathologists. The team's initial findings, issued in a statement by Canadian pathologist Dr. James Young, were "at this time, our preliminary opinion is that death was due to natural causes as a result of long-standing heart disease." A full autopsy report will be released after additional forensic tests are completed on tissue samples sent to Britain and Canada. (R) (BBC)
July 21 Oil analysts calculate that oil export revenues of the Organization of Petroleum Exporting Countries (OPEC) have fallen by a third in 1998 due to the decline in oil prices. According to Petrostrategies of Paris, OPEC=s collective export revenues have fallen from $89.6 billion in the first six months of 1997 to $60.7 billion in the first six months of 1998. Analysts predict that for all of 1998, OPEC oil export revenues will fall 30 percent from a 1997 total of $121.5 billion. Export revenues have declined for almost all OPEC members, with the exception of Iraq, whose revenue has increased 20 percent in the first six months of 1998 under the United Nations= oil-for-food program. (NYT)
July 23 Shell Nigeria announces the signing of 14 natural gas supply agreements with local companies. Eight of the consumers are in Aba, Abia State and six are located in Ogun State near Lagos. They will take a combined 15 million cubic feet of gas per day. (DJ)
July 27 General Abdulsalam Abubakar cancels oil concessions granted to Nigerian companies at the time of previous leader General Sani Abacha's death on June 8, 1998. General Abubakar also reportedly is no longer

awarding new oil concessions or prospecting leases. Companies that are affected by the decision include Malabor Petroleum, DICS Petroleum, Feuimarc Petroleum, and Continental Petroleum. (DJ)

August 1998

August 7 In its July 1998 report, the International Energy Agency (IEA) estimates that the Organization of Petroleum Exporting Countries (OPEC) produced 27.81 million barrels per day (bbl/d) of oil in July 1998, down 355,000 bbl/d from 28.17 million bbl/d in June 1998. Excluding Iraqi production, OPEC produced 25.53 million bbl/d in July. The figures show OPEC to be 56 percent compliant with production cuts agreed to earlier this year. In addition, the IEA reduces its projection of world oil demand in 1998 by 200,000 bbl/d to 74.7 million bbl/d, a rate just 900,000 bbl/d higher than demand in 1997. (DJ) (WSJ)
August 20 A leaking pipeline curtails loading of crude on the Royal Dutch/Shell operated Forcados terminal. (OD) (DJ)
August 24 Nigerian villagers have taken hostage a boatload of workers under contract to Texaco bringing the total number of hostages held to 16. (OD)
August 25 The Nigerian division of the Italian-firm Agip has shut in 125,000 barrels per day (bbl/d) of crude production running into the Brass River terminal. Production was shut in due to local community disturbances. The Brass River area produces about 180,000 bbl/d. (DJ)

September 1998

September 8 Mobil reported that it had exported its first natural gas liquids (NGLs) from its Oso facility located offshore Nigeria. The $850 million NGL plant began production in July, and it is a joint-venture between Mobil and the Nigerian National Petroleum Corporation (NNPC). Mobil has a 51% stake in the venture. (OD)
September 10 Exports of Forcados crude resume, although a week later than planned. The September 6th startup was missed because the subsea pipeline fracture that brought loadings to a halt proved trickier to repair than expected. Royal Dutch/Shell has yet to lift the *force majeure* it declared when shipments were halted. (OD)
September 11 The Paris-based International Energy Agency estimates that in August 1998, the Organization of Petroleum Exporting Countries (OPEC) implemented 83 percent of their pledged oil production cutbacks. OPEC production, excluding Iraq, fell to 24.83 million barrels per day (bbl/d). Total OPEC production for August 1998 declined to 27.26 million bbl/d from 27.65 million bbl/d in July 1998. Meanwhile a *Dow Jones* survey of oil market observers indicates that OPEC was 86 percent compliant with its oil production cutbacks. According to *Dow Jones*, OPEC's August production, excluding Iraq, fell to 24.757 million bbl/d. Total August output declined to 27.058 million bbl/d from 27.67 million barrels per day in July 1998. (DJ) (WSJ)
September 24 French oil giant Total rejected charges of incompetence over its handling of the 215-million-dollar repairs of a major Nigerian oil refinery the day after officials called for its contract to be reviewed. Total said in a statement that it would complete "on time and in the agreed budget" the contract signed in April to repair the 110,000 barrels-per day refinery at Kaduna, and maintained that its work at the plant was of the "highest standards." Morrison Tamuno, managing director of the Kaduna refinery, told reporters Tuesday he has urged a review of the contract and the circumstances in which it was awarded by the government of late military ruler General Sani Abacha. Abacha, whose regime is being probed by new military ruler General Abdulsalam Abubakar, had not consulted refinery officials over Total's appointment. Total and NNPC signed a contract, which took effect April 28, 1998, under which Total agreed to assist in a program of major repairs to the Kaduna refinery... estimated at 215 million dollars. (PANA)
September 24 Shell is appointed technical advisor for turnaround maintenance at Nigeria's Port Harcourt Refineries. Shell last year carried out detailed studies on Nigeria's four refineries, at the request of the government. (DJ)

October 1998

October 7 Agip declares force majeure on 28,000 barrels per day of Nigerian Brass River crude after local protestors tamper with an export line. (PON)
October 14 The Warri refinery, which currently was the only operating refinery in Nigeria, was forced to shut down following the collapse of the turbines which supply power to the facility. (PANA)
October 18 Villagers trying to tap into a trans-national oil products pipeline in Nigeria touch off a blazing inferno which razes several villages and destroys a swath of surrounding cropland. Hundreds of people are killed. The pipeline, which belongs to the state-owned Pipeline and Products Marketing Company (PPMC), connects the

refinery located in Warri to the northern city of Kaduna. PPMC officials blame the disaster on sabotage. (DJ) (OD) (CNN)

November 1998

November 10 The New York Mercantile Exchange (Nymex) announced that it has approved the addition of another foreign crude, Nigeria's Qua Iboe, to the list of crudes deliverable against light, sweet futures contracts. The Nymex also cut the premium paid for the delivery of Nigerian Bonny Light by $0.10 per barrel. (DJ) (OD)
November 12 Nigerian youths abduct seven foreign oil workers, including three Americans, from an offshore Nigerian drilling rig that is under contract by Texaco. Oil rigs in Nigeria have been the subject of attack and protest on several occasions this year by Nigerian youths alleging that the targeted oil companies are destroying their villages. (DJ)
November 26 Organization of Petroleum Exporting Countries (OPEC) member countries are unable to agree on additional production reductions beyond those agreed to in June 1998 or even on extending current reductions beyond June 1999. OPEC members do agree to reschedule their twice-yearly ministerial meetings to March and September from June and November. (DJ)

December 1998

December 6 The People's Democratic Party (PDP) wins control of 60% of local councils in elections held on December 5th. The elections are the first step in General Abubakar's plan to restore the country to civilian rule by May 1999. State elections are scheduled for January 1999, National Assembly elections in early February, and the Presidential election is slated for February 27, 1999. (BBC)
December 9 Protesting youths from the Ogulagha community shut down Shell's Forcados oil export terminal over a dispute with Mobil. An estimated 400,000 barrels per day of exports are lost from the shut terminal. The community had been negotiating with Mobil over compensation for an oil spill that occurred last year. Mobil's compensation offer, of 60 million Naira (about $750,000), was rejected on the grounds it was inadequate. (PANA)
December 21 Nigerian fuel prices more than doubled after four years at a level fixed by the government of Africa's largest oil-producing state. There had been no public announcement of a rise in the price, but filling stations sold gasoline for 25 Naira ($0.29) per liter, instead of the previous 11 Naira pump price. Increases in official prices have in the past triggered riots, but there were no immediate reports of unrest. (CNN)

January 1999

January 6 Texaco and Famfa Oil Limited of Nigeria, have announced a major wildcat discovery on OPL Block 216, which is located in the deep waters approximately 70 miles offshore Nigeria in the central Niger Delta. Preliminary data indicates the reservoirs contain several hundred million barrels of recoverable oil. Texaco and Famfa were granted exploration rights to the 617,000-acre OPL Block 216 in late 1996. (Business Wire)

February 1999

February 1 Up to 19 people were killed in weekend clashes between youths and Nigerian security forces near Royal Dutch/Shell's Forcados oil export terminal. (R)
February 9 Total, which signed an agreement with the Nigerian National Petroleum Corporation (NNPC) for repair work on the NNPC's Kaduna Refinery in March 1998, announced that the refinery had been restarted. (Total Press Release)

March 1999

March 4 Royal Dutch/Shell (Shell) has announced that it will not pay compensation to local communities for an oil spill the company blames on sabotage. A pipeline rupture in late January was, according to Shell officials, caused when explosives were used to blow up a section of the pipe. 70,000 barrels per day of crude oil production was shut in until repairs could be made to the damaged pipeline. (OD)
March 15 The TKSJ consortium has signed a lump sum turnkey agreement worth about $1.2 billion with Nigeria LNG (NLNG) for a third LNG train at Bonny Island, Nigeria, consortium member Snamprogetti said. Aside from Snamprogetti- the engineering arm of ENI, French engineering and contracting company Technip, U.S. engineering and contracting company Kellogg Brown & Root and Japan Gasoline Company (JGC) are other members of the consortium. Snamprogetti said that the first two LNG trains will come on stream in the summer of 1999 and at the end of 1999, as per contract schedule. Work related to the expansion project will be completed in 2003. (Nikkei)

March 26 The African Development Bank (ADB) has disbursed $2.2 billion U.S. dollars as loans to execute 46 projects in Nigeria. (PANA)

April 1999

April 2 Nigeria's federal appeal court sitting in Abuja has rejected two pleas by defeated presidential candidate, Olu Falae, as his lawyers closed their case Thursday against president-elect, Gen. Olusegun Obasanjo. Falae's lawyers had asked for more time because of alleged frustrations they were facing in conducting investigations in the case of alleged electoral fraud, which he claimed gave Obasanjo victory in the 27 February presidential poll. (PANA)
April 9 Royal Dutch/Shell has secured a breakthrough deal with Nigeria to fund development of its offshore EA oilfield, its upstream head said on Friday. "We have agreement now for alternative funding for the EA field which is in shallow water," Group Managing Director Phil Watts said in an interview. The $400 million EA development has estimated production potential of 60,000 barrels per day (bbl/d). Watts hopes the new deal could ease contract talks on the even more promising 350,000 bbl/d deepwater Bonga discovery. (R)
April 9 Residents of the oil-rich Niger delta region have seized boats and pipeline facilities from multinational oil companies to press for further compensation for an oil spill there last year. The Association of Mobil Spill Affected Communities (AMSAC), formed after a spill damaged fishing grounds and farmland, vowed to continue seizing equipment until Mobil Oil pays at least $20 million in additional compensation. In a release issued by AMSAC, seven flow stations belonging to Shell in the Batan area and six in the North Bank Oil Fields belonging to Agip were seized. In the largest oil spill in the west African country's history, at least 21,000 gallons of light crude washed ashore in January 1998 after about 1.6 million gallons spilled from a Mobil pipeline connecting an offshore platform to a storage facility in Nigeria's Akwa Ibom state. (AP) (Xinhua)
April 10 Nigerian oil companies have been directed to reduce the volume of April cargoes and to be in full compliance with the recent OPEC decision on oil production curtailment beginning from next month. A statement issued by the Nigerian National Petroleum Corporation (NNPC) said that Nigeria's crude oil production will be reduced from 2.033 million barrels per day (bbl/d) to 1.885 million bbl/d starting from May. The statement noted that "the NNPC wishes to express Nigeria's commitment to full compliance with the OPEC curtailment of crude oil production as it affects Nigeria from 2.033 to 1.885 million barrels per day." (Xinhua)
April 10 Nigeria's military ruler General Abdulsalam Abubakar met more than 200 delegates on Saturday from the volatile oil-producing Niger Delta to try to end turmoil there before he steps down. Nigeria's oil output has been seriously hit over the past year due to disturbances caused by local youths demanding a greater share of the region's wealth for impoverished farming and fishing communities. Multinationals operating joint ventures with state-run Nigerian National Petroleum Corporation say a lasting solution needs to be found to allow them to maintain output capacity, which currently tops 2 million barrels per day. (R)
April 26 Oil company BP Amoco has decided to give up oil concessions in Nigeria, valued at over $220 million as part its investment review program. (R)
April 26 Nigeria has issued new guidelines for fuel imports allowing smaller importers, the Department of Petroleum Resources (DPR) said on Monday. Following the initial deregulation of fuel imports in December only the state-owned fuel procurement and distribution company, major petroleum products marketers and independent marketers as a group were permitted to import fuel. The new guidelines allow petroleum products marketers who meet stipulated requirements to import fuel to further improve supplies and end the scarcity of the commodity experienced in Africa's biggest oil producing country in recent years. (R)
April 27 The exploitation of bitumen, which is used heavily in road construction, will commence in southwestern Nigeria on May 15, According to Femi Dada, the director of the project. Nigeria has over 42 billion barrels of bitumen reserves in southwestern Lagos, Ondo, Edo and Ogun states. Apart from asphalt, used in road construction, heavy crude oil can be processed from bitumen. (PANA)

May 1999

May 5 Nigeria has awarded the contract to repair and refurbish its Warri refinery to a consortium of American, Canadian and Dutch firms. The maintenance contract for the 125,000-barrel per day facility was one by a group composed of Dietsman Comerint of the Netherlands, Litwin of the United States, and Ramboil of Canada. (R)
May 6 Nigeria's outgoing military rulers have passed a law to allow a vast privatization program but left the responsibility for carrying it out to an elected government. The privatization and commercialization decree of 1999 was passed by the Provisional Ruling Council. Up for sale are stakes in almost all Nigeria's biggest firms apart from the majority share it holds in oil production joint ventures, which account for about 90% of export earnings. An

initial 40 to 60 % stake would be sold to strategic investors -- probably foreign -- who will run the enterprises until they become profitable when a further 20% government stake will be sold. (R)
May 10 At least 10 people are killed in ethnic clashes in the southern Nigerian city of Warri, which is located in the Niger Delta. (OD)

June 1999

June 6 The Central Bank of Nigeria (CBN) estimates that proceeds from the sale of LNG will be $623.4 million in 2000. the CBN's annual report stated that earnings from the sale of LNG will grow from $322.5 million in 1999 to $623.4 million the next year. LNG sales will net $716.8 million by 2005. The CBN also stated that gas sales from the West African Gas Pipeline will generate an additional $113 million annually. (DJ)
June 8 Ethnic clashes in the city of Warri results in an estimated 200 deaths. (OD)
June 11 the Nigerian Coal Corporation has privatized 75% of the Okaba coal mine located in the northern state of Kogi. (Mining Journal)
June 18 Nigeria LNG (NLNG) signs a 20-year contract to supply gas to Portugal's Transgas beginning in the 4th quarter of 2002. With the conclusion of the agreement, NLNG has pre-sold all output from the third train of its LNG facility. The third LNG train is expected to be completed in 2002. (DJ)
June 23 Texaco declares force majeure on exports of its Pennington crude after youths demanding compensation for an oil spill that occurred last year board and occupy two production platforms. (OD) (R)

July 1999

July 2 The Nigerian National Petroleum Corporation (NNPC) announces that it is canceling all crude oil term contracts effective at the end of September. (DJ) (OD)
July 8 Shell is forced to shut in 250,000 barrels per day of crude oil production following the occupation of oil wells and flow stations. Shell eventually declares force majeure on oil shipments from its Bonny and Forcados facilities. (DJ) (OD)
July 9 New guidelines for crude oil lifters are announced by the Nigerian National Petroleum Corporation (NNPC). The guidelines identify three categories of companies the NNPC will consider for crude contracts: refinery owners, internationally-recognized oil-traders (minimum annual turnover of $100 million and a net worth of $40 million) and companies that own a refinery in Nigeria. (DJ)
July 13 Community unrest in the Niger Delta forces France's Elf Aquitaine to shut in 28,000 barrels per day of crude oil production. (OD)
July 15 President Obasanjo announced that a bill for the creation of the Niger Delta Commission (NDC) would be presented to the Nigerian parliament for approval. The NDC would supervise development and spending in the area, and the foreign oil firms have agreed to help finance the NDC. (OD)
July 16 An official government statement announced the cancellation of 16 exploration blocks awarded by the previous government of General Abubakar. (DJ)
July 23 The Aluminum Smelter Company of Nigeria (Alscon) closed its plant, citing funding shortages and other hindrances. A major problem was Alscon's inability to obtain sufficient quantities of natural gas. The Alscon plant was only operating at 20% of its capacity due to fuel constraints. (Mining Journal)
July 23 Ethnic rioting has claimed the lives of at least three people in the northern city of Kano. Groups of Hausa youth are blamed for attacking Yorubas and other ethnic groups. Some reports place the death toll as high as 10. These attacks follow violence in the southern town of Sagamu where an estimated 60 people were killed in ethnic clashes on July 18. (AP) (DJ) (BBC)
July 28 President Obasanjo has announced plans to increase Nigeria's oil production by approximately 50% over the next four years. He said the aim was to boost output from two million to three million barrels of crude oil per day by providing better funding to develop new oil and gas fields. (OD)
July 29 Nigerian President Olusegun Obasanjo set out a three-phase plan for privatizing more than 1,000 state enterprises on Thursday but said his government would take its time to avoid being short-changed. The key privatizations of telecommunications firm NITEL, power firm NEPA, oil refineries, the state airline and a fertilizer company will be held back until the last phase, Obasanjo said. He gave no specific date for their sale. (R)

August 1999

August 3 At least 50 people are killed in ethnic clashes that occur in the southwestern state of Ondo. (DJ)
August 5 As part of the process of freeing up the Nigerian economy, petroleum products prices will be deregulated next year, Finance Minister Adamu Ciroma said on Thursday. Petroleum products prices were last increased in oil

producing Nigeria last December, when the price of gasoline went up from 11 Naira (10 cents) a liter to 20 Naira a liter. But petroleum marketing companies have often urged for higher prices on the grounds that their costs were not being recovered at the current prices. (R)

August 6 Nigeria has given approval to U.S-based Mobil Corp to begin generating 350 megawatts of electricity from its gas turbine in the country's southeast, a local newspaper said on Friday. It said the approval ended a three-year delay in starting the plant powered by gas from Mobil's mainly offshore oilfields around Nigeria's southeast Atlantic coast. Power generated by Mobil will be sold to the state-owned power utility NEPA after the signing of a purchase agreement, the paper said. (R)

August 10 Shell lifts a 31-day old force majeure on loadings of Forcados crude. The force majeure declared on Shell's Bonny production was lifted on August 3. Force majeure was declared following ethnic unrest, which disrupted Shell's operations. (DJ) (OD)

August 12 U.S-based Chevron Corp. said on Thursday it was yet to reach a final deal for a West African gas pipeline after signing an agreement with four countries on Wednesday for the project to go ahead. Chevron said the remaining issues were expected to be resolved soon to finally make way for the construction of a $400 million pipeline to deliver Nigerian gas to regional neighbors Benin, Togo and Ghana. Chevron, Royal Dutch/Shell and state gas firms of the four countries joined government representatives in signing a memorandum of understanding for the project in Benin's capital, Cotonou, on Wednesday. The pipeline project, expected to provide gas cheaply for power generation, is one of the uses being found for Nigeria's gas, most of which is currently flared in the course of oil production. (R)

August 15 U.S. Energy Secretary Bill Richardson signed a tentative cooperation agreement to aid Nigeria's troubled oil industry and other energy sectors in return for substantial free market reforms, officials said Sunday. The document calls on Nigeria to begin privatizing state energy companies and remove trade and investment barriers. In return, the United States will provide short-term aid to help alleviate oil, gas and electricity shortages in Nigeria. (AP)

August 16 Texaco declares force majeure following continued community unrest. Approximately 50,000 barrels per day of crude oil production is shut in. (OD)

August 18 The Nigerian National Petroleum Corporation (NNPC) has granted 16 crude-lifting contracts totaling 865,000 barrels per day (bbl/d). The NNPC stated that the contracts replace the 41 contracts that were cancelled in July. South Africa, for the first time, was granted a contract to lift 55,000 bbl/d of crude. Ghana and Kenya were each awarded with 30,000 bbl/d-lifting contracts. (CNN) (PANA)

August 19 Youths protesting a lack of employment opportunities with Texaco, attacked the company's office in the southern city of Warri. Texaco officials stated that the facility sustained only minor damage. (R) (OD)

August 24 Shell announced that it had reached a tentative agreement with ethnic groups on the reopening of seven flow stations in the Niger Delta region. The flow stations, located near Warri, have been closed for several months due to community unrest. (DJ) (R)

August 26 The Nigerian National Petroleum Corporation (NNPC) named five new directors, but the head of the crude oil marketing division remains unfilled. (OD)

ABUJA MIRROR: SEPTEMBER 22-28, 1999

Legislator warns NNPC, LG chairmen

The Nigerian National Petroleum Corporation (NNPC) has been warned against the idea of not procuring adequate storage facilities used in storing petroleum products for thirty days contingency in case of fuel scarcity.

Speaking to newsmen in Abuja recently, Honourable Surajo Mohammed noted that such initiative would avert any fuel scarcity, since NNPC could fall back to it whenever scarcity of petroleum products resurfaced.

Honourable Surajo Mohammed stated that since the country still export fuel, it would be proper for NNPC to take adequate preventive measures to avert unexpected fuel scarcity.

Honourable Surajo Mohammed Wudil noted that even if 10 cargoes were imported daily and the discharging facilities were not there, it could also spark off scarcity. He pointed out that lack of adequate discharging facilities was one of the major factors contributing to scarcity of fuel and petroleum products in the past. According to him, "members of the public were pointing accusing fingers at independent dealers, marketers and major companies. The people could not just understand the problems facing them."

He noted that the setting up of Petroleum Equalisation Fund, which is charged with the responsibility of equalisation of petroleum price all over the country has reduced variation in the price of the products.
Honourable Surajo Mohammed Wudil stated that monitoring of the de- regularisation has completely discouraged marketers from taking the products to other neighbouring countries.
Honourable Surajo Mohammed Wudil said that the action of this civilian regime in removing all the people sabotaging the efforts of NNPC from making petroleum products available to Nigerians created fear among the staff of NNPC. This, he said, has made them live up to their civic responsibility.
Commenting on the 100 days in office of the present civilian regime, he said both the executive and the legislature have achieved little, but that it is still too early to assess them. According to him, "people should not forget that we are still in the learning process, and we are trying to put right the wrongs of 15 years of military rule. At least, we should be given a pass mark.".
On the inadequate funding of the local governments, Honourable Surajo Mohammed Wudil stated that in the past, Local Government Chairmen were reckless with money allocated to them by the Federal Government. That, of course, informed the decision of the Federal Government to restrict Local Government finances.
He added that if the two tiers of government could properly utilise the funds allocated to them, it would reduce unemployment; pointing out that over one million youths are unemployed in this country.
Honourable S. M. Wudil suggested that most of the industries that have folded up should be revitalised in order to create employment for the unemployed youths, who are currently creating social problems in the country.
On the health sector, he suggested that government should review it by developing a very good policy. "It should start with health centres, cottage hospitals and general hospitals at State level", he said.
On poverty alleviation, Honourable Surajo Mohammed said sweeping changes in agencies responsible should be carried out, to make them serve the purpose for which they were established.

World Bank Data
November 1999

Basic Statistics on Nigerian Energy Sector

Population (millions 1996	Rural Population (% of total) 1995	GNP/capita (US$) 1996	Access to electricity in percent/1 1996	Energy consumption/2 (kgoe) 1994
144.4	60.7	240	10.5	162

* * *

Extracts from http://mbendi.co.za

Oil Industry Profile - Nigeria

Overview

The upstream oil industry has become Nigeria's lifeblood and is the key to understanding the political and economic situation in the country. The recent trial and subsequent execution of Ken Saro-Wiwa and 8 other political activists has drawn worldwide condemnation of the country's military rulers and focussed attention on its oil industry and on the activities of the international oil companies operating there, specifically Shell. At issue is the equitable sharing of the country's US$10,000 million annual oil revenues among the its population and on the environmental responsibilities of the oil multinationals.

Nigeria has a huge population and abundant natural resources especially hydrocarbons. It is the 10th largest oil producer in the world, the third largest in Africa, and the most prolific oil producer in Sub-Saharan Africa. It currently produces 90 million tons of crude per year (2 million barrels per day) most of which it sells to international traders. The upstream oil industry is the single most important sector in the country's economy, providing over 90% of its total exports. From 1970 to 1975 the share of government revenue flowing from oil increased from 26% to 82% where it has stayed ever since. The country has become so dependent on its upstream oil sector that despite political instability and consequent economic disruption, it has effectively been insulated from problems affecting the rest of the economy. Dominating both the oil industry and by extension, the national economy, is the giant parastatal Nigerian National Petroleum Corporation (NNPC) and all its subsidiary companies which have close control over all sectors of the oil industry from exploration and production to refining, pipelines, marketing, foreign sales and petrochemicals.

Nigeria's downstream oil industry is also under the close control of the NNPC which owns the country's 4 refineries and has a significant shareholding in all of the larger marketing companies. However, lack of money and widespread corruption has contributed to the current state of disrepair of the downstream infrastructure and is forcing the oil and finance ministries to recognise the logic of reducing direct state involvement in the oil industry. The government has stated that it plans to deregulate the downstream oil sector. For this to happen, the heavy price subsidies on refined products needs to be scrapped in order to allow prices to become market related. Since most Nigerians regard oil as a gift from God and their natural right to enjoy on the cheap, any moves to raise prices is likely to be met with resistance and any ruling government is unlikely to risk its future on this issue. A more realistic scenario is contained in a report released in July which recommends that private oil companies be allowed to take over partial operation on a management contract basis of the country's inefficient refining and distribution sectors.

History of Oil Industry

Oil was discovered in Nigeria in 1956 at Oloibiri in the Niger Delta after half a century of searching. The discovery was made by Shell-BP, at the time the sole concessionaire. Nigeria joined the ranks of oil producers in 1958 when its first oil field came on stream producing 5,100 bpd. Exploration rights in onshore and offshore areas adjoining the Niger Delta were then extended to other foreign companies. Further exploration and production activity was hampered between 1967 and 1970 when the country was involved in a devastating civil war caused by the attempted secession of the eastern provinces from the rest of the country. In 1970, the end of the Biafran war coincided with the rise in the world oil price, and Nigeria was able to reap instant riches from its oil production. Total production from Nigeria's oil fields has increased from 308 million barrels in 1970 to 703,495 million barrels in 1991. The peak of its production came in the 1980's when the total output was 753.5 million barrels per annum of which 93% was exported.

Up to 1960, government participation in the oil industry was limited to the regulation and administration of fiscal policies. However the growing importance of oil to the national economy prompted the government's shift to a more active and direct participation. The government's direct involvement in the activities of the petroleum industry in Nigeria started in the upstream sector when it acquired 30% participation interest in the Nigerian Agip Oil Company. In 1971, Nigeria joined OPEC and in line with OPEC resolutions, the Nigerian National Oil Corporation (NNOC) was established in 1971, later becoming NNPC in 1977. Its mission was to explore, produce, treat, transport, refine, process and market crude oil, gas and petroleum products, carry out research and regulate the oil industry through an inspectorate arm. Following the enactment of the Indigenization Decree of 1977, the government, through the NNPC became the dominant player in the downstream industry by acquiring equity shares in all the international oil marketing companies in the country and taking over ownership of the Port Harcourt I refinery from Shell-BP.

Successive Nigerian governments have since come to rely heavily on the revenues from the country's oil sector and have sought to retain close control over the industry at all levels. Any political opponents who question the operations of the oil industry are considered a threat and dealt with in harsh terms. Such was the situation regarding Ken Saro-Wiwa and 8 other political activists who were executed at the beginning of November.

Saro-Wiwa and eight others, who belonged to the Ogoni people of the oil-rich Niger Delta province, were charged with conspiracy to murder four other Ogoni. They blamed Royal Dutch-Shell, which used to operate the Ogoni fields with NNPC, and demanded that it pay compensation for the pollution from oil spills which damage food crops; the separation of farmers from their land by pipelines which often leak; and the health problems caused by continual gas flaring. Until operations were suspended two years ago, 155,000 barrels of oil a day were being pumped from their lands. Yet it remains one of the least developed parts of Nigeria, with poor roads, few clinics or schools and piped water only in the most privileged homes. Shell wants to repair its public relations. The company emphases that Shell International is a minority partner in Shell Nigeria, with the government owning 51% of the equity; so it has no leverage on political issues such as the trial or the distribution of oil revenues.

Nigeria is suffering escalating fuel shortages which threaten to paralyse economic activity. In Lagos, which alone consumes nearly a third of national output, petrol is trading on the black market at about five times the official rate.The finance ministry pushed through cuts in the crude oil allocation received by the Country's three functioning refineries from 300,000 barrels a day to 250,000 barrels a day. The corporation says this is insufficient to meet demand which is estimated to be about 18 million litres a day. The ministry evidently failed to release $200 m allocated for the refurbishment of those refining facilities.

Nigeria is a member of OPEC and is its 12th largest producer. The former Secretary-General of OPEC, Dr Rilwanu Lukman, is a Nigerian national.

Governance

The petroleum industry in Nigeria is regulated by the Ministry of Petroleum Resources. Because of its critical importance to the national economy, the government retains close control over the oil industry and the activities of the parastatal conglomerate, the NNPC, whose senior executives are appointed by the ruling government. The address of the Ministry is Private Mail Box 12701, Lagos, Nigeria. Telephone +234-1-603100.

The current Minister of State for Petroleum Resources is Mr Dan Etete who has particular responsibility for the upstream sector. The Deputy Minister is Mr Kabiru Sulaiman Chafe whose main responsibility is the downstream industry.

Upstream Oil Industry

Overview

The upstream oil industry is the key to the Nigerian economy and to the entire Nigerian oil industry. Nigeria's current proved recoverable reserves of crude oil are 2.4 thousand million tons (17.9 thousand million barrels), representing 1.8% of the world's total proved reserves. At current production rates this gives the country a 1:26 Reserve to Production ratio. Its proved reserves of natural gas are 3.4 trillion cubic metres which is 2.4% of the world's total proved gas reserves. Crude oil production in 1994 was 93.1 million tons (1880 thousand barrels per day) or 2.9% of the world's total output, and 27.7 billion cubic metres (bcm) of natural gas. Nigeria is a member of OPEC; its production quota is 1.865 million bpd.

There are over 150 producing oil fields in Nigeria and 600 wells. Most of the fields are relatively small, producing on average about 10,000 bpd with a high proportion of associated natural gas. 70% of production comes from the swampy areas of the Niger Delta and the remainder from offshore fields.
Nigeria produces 10 streams of crude oil / condensate. Bonny Light and Forcados are Nigeria's marker crudes on the world market. 65% of the crude produced in Nigeria is light sweet crude with an API specific gravity of 35 or higher.

The oil producers
The Nigerian upstream oil industry is dominated by the NNPC which has joint participation ventures or production sharing contracts with all foreign oil companies operating in Nigeria, and rights to half or more of the oil produced by each joint venture. Currently there are 7 principal crude oil and 1 condensate production joint ventures in Nigeria as listed below :

The Shell Petroleum Development Company of Nigeria Ltd is a joint venture between Shell (30%), Elf (10%), Agip (5%) and NNPC. It is the largest upstream player in Nigeria producing close to 1 million bpd of crude oil or half of Nigeria's crude output from over 100 fields. Crudes produced are Forcados, Bonny Light and Bonny Medium from onshore fields in the Niger Delta.

Chevron Nigeria Ltd (owned 40% by Chevron and 60% by NNPC), is an offshore producer with its operational base at Escravos in the Delta State. It has a production output of 325,000 bpd or 18% of Nigeria's total output.
Mobil Producing Nigeria Ltd (MPN) (owned 40% by Mobil and 60% by NNPC), has an annual output of 325,000 bpd of offshore Qua Iboe crude and 110,000 bpd of Oso condensate.

The Nigerian Agip Oil Company (NAOC), a joint venture owned 60% by NNPC, 20% by Agip and 20% by Phillips Petroleum has a current production output of 145,000 bpd of onshore Brass River crude.
Texaco Overseas (Nigeria) Petroleum Company (Topcom) is a venture owned 60% by NNPC and 20% each by Texaco and Chevron which produces 60,000 bpd of offshore Pennington crude.

Ashland Oil (Nigeria) which has been in the country since 1973 has a production output of 25,000 bpd of offshore Antan crude.

Elf Petroleum Nigeria Ltd produces 60,000 bpd of offshore Odudu crude and onshore Bonny Medium crude.

Other companies with joint ventures or production sharing agreements with NNPC are Deminex, Pan Ocean, British Gas and Sun Oil. Recent entrants to the Nigerian upstream scene are Conoco and a BP-Statoil alliance. In addition to the international oil companies, there are 2 indigenous private Nigerian oil producers, Consolidated Oil (Conoil) and Dubri Oil.

Exploration activity
Despite its questionable politics and uncertain economy where reports of corruption at all levels are widespread, Nigeria is still seen as an attractive area for upstream investment by international oil companies. Among the multinationals currently engaged in exploration work in the country is Shell Petroleum Development Company of Nigeria Ltd which is drilling in in the deepwaters offshore and in the semi-arid Gongola Basin in the northern area of the Bauchi State. Elf and NNPC plan to invest $300 million in developing a recently discovered field in the Ofon permit, 50 km off the coast of southeastern Nigeria. Production is expected to begin in January 1998 and projected to produce 55,000 bpd at full capacity. Plans for a new round of bidding for exploration permits in 1996 were also announced in November 1995.

Current problems in the upstream sector
The petroleum industry in Nigeria is controlled by the government through the auspices of the 100% state-owned Nigerian National Petroleum Corporation (NNPC) which holds 55%- 60% joint venture partnerships with the international majors operating in the country.

In 1994, NNPC was under considerable pressure from the international majors as it had not contributed towards its share of upstream development costs. Consequently, Shell declared the NNPC in default and the other oil majors warned that unless the government improved its funding or reduced its equity, more default notices would follow. At the end of 1994 Shell was owed $380 million, Chevron $200 million, Mobil $180 million and Elf and Agip approximately $110 million each.

As the cash flow situation worsened, foreign executives considered the suspension of contracts and of capital spending until some credible settlement between NNPC and its partners was reached. Consequently, NNPC arranged for a new payment system to be established to deal with past arrears and avoid future build-up. A standing order with the central bank was established to pay an aggregate $184-million, of which $167-million is in dollars. This includes $146-million for current spending and $21-million to help clear arrears. But the two sides are still far apart, unable to agree even on whether the level of the debt is still $1.1-billion, despite recent payments, or the much lower $400-million that NNPC claims.

With the release of the government's 1995 budget, operators were worried as allocation of funds to NNPC for its 1995 contributions to joint ventures cover repayments of less than one-quarter of 1994 arrears. The budget is based on a crude price of $15/bl. It allocates Naira 51bn ($2.3bn) to state owned Nigerian National Petroleum Corporation's(NNPC) share of upstream joint venture costs, in line with requests from foreign operators such as Shell, Mobil and Chevron. Last year's $3bn (N69bn) budget provision - base on $14/bl crude - was whittled down to only $1.3bn. Output in the budget is forecast at 2.03mn b/d, including condensate. This is equivalent to crude production at or near Nigeria's 1.865mn b/d OPEC quota.

NNPC was also required to renegotiate the terms of its upstream contracts with the companies that hold equity in the country's oil fields under joint ventures. The government is expected to argue that its economy has deteriorated so much since then that it can no longer afford to be as generous as it was five years ago. The 1991 contracts guaranteed these companies profit margins of $2.30-$2.50 a barrel on equity production.Despite attempts to develop a new system to replace the current joint-venture arrangements, speculation is that the basic structure will not be changed. One initially popular proposal was to switch the joint-venture deals to production-sharing contracts. This would avoid the arrears problem in the future by requiring the international partners to pay all up-front costs and recover them from crude sales. But while this system has been used for new exploration agreements since 1991, conversion from the existing arrangement is now viewed as difficult.

Gas utilisation projects

In Africa, over 50% of gas reserves can be found in North Africa while another 30% are in Nigeria. Proven gas reserves are said to be approximately 3.4 trillion cu m, nearly two-thirds of which can be found in the Niger Delta. The gas reserves, 2.1% of the world's total, are large enough to satisfy Nigerian needs for well over 200 years. Gas production is estimated at 27.7 billion cu m, of which 3.71 billion cu m is sold domestically for use in power generation and by oil and petrochemical companies, and the balance flared. One estimate suggests that domestic demand for gas could reach 7.5 billion cu m by the turn of the century.

At current rates of production, it is estimated that Nigeria's oil reserves will be exhausted in less than 30 years time. The government therefore sees the need to diversify and broaden the country's revenue base. One of these areas is to exploit the country's vast reserves of natural gas, the 8th largest in the world. Three gas projects are presently being considered: the export of liquefied natural gas to Europe and the US; the processing of gas, currently flared, for use in the domestic market; and the building of gas pipelines to neighbouring countries.

The most ambitious project is the LNG project which is currently the subject of much controversy since one of the partners, Shell, announced its determination to go ahead despite the worldwide condemnation of Nigeria for its execution of political activist, Ken Saro-Wiwa. and eight others. The Nigeria LNG project is a $4 billion joint venture between NNPC (49%), Shell Gas (24%) the project's technical manager, Elf subsidiary CLEAG (15%) and Agip (10%). 2% of the equity has been reserved for the International Finance Corporation which is to provide $100 million in financing for the project. The project will produce 5.7 billion cubic metres (bcm) of LNG by 1997. Sales agreements with 4 major buyers - Enel (Italy) which will take 65% of the output, Enagas (Spain), Gaz de France and Distrigas (USA) - have been negotiated.

Construction of the LNG plant is planned for Bonny Island in Rivers state. The project consists of gas transmission systems, a gas treatment system, a two train liquefaction plant, LNG storage tanks, a loading terminal and LNG carriers for evacuation. The plant is expected to process 750 million cubic feet/day of non-associated gas from near-surface-onshore fields.

A number of projects are underway to decrease the flaring of associated gas. The Escravos gas flaring abatement project is a venture by Chevron and NNPC to recover associated gas from offshore wells in the Escravos field for processing and delivery to the Nigerian Gas Company for distribution and marketing to gas fired power stations. Shell is also constructing a gas gathering network in the Niger Delta for supply to regional gas powered industries. An agreement in principle has been signed between the oil ministers of Nigeria, Benin, Togo and Ghana for Nigeria to supply natural gas to the three West African countries and possibly Côte d'Ivoire as well. The agreement would be effective after the completion of a pipeline and other facilities in 1998. The World Bank has agreed to finance the pipeline project through its affiliate IDA to the tune of $260 million. Chevron, the producer of the gas, MAN the German power group, and US investors expect to form a consortium for the project.

According to a study carried out by Italian consultants Baín, Cuneo Associates in 1992 for the World Bank, the project could reduce primary energy costs in the region by $500m over 20 years. The potential demand from neighbouring states for Nigerian gas is expected to rise from 50m cu ft per day in 1998 to 160 mcfd in 2018 thanks to expanding power generation. The supply will be from Chevron's West Delta field near the Escravos terminal in mid-western Nigeria. It has recently been announced however, that the agreement has been shelved until a later date.

Downstream Industry

Overview

The downstream oil industry in Nigeria is another key sector in the country's economy. The country has 4 oil refineries and petrochemical plants. There are 8 oil companies and 750 independents all active in the marketing petroleum products. Cross-border smuggling is an ongoing problem and there are frequent reports of large scale corruption in the distribution and marketing chain. The government through its 100% state-owned national oil company, Nigerian National Petroleum Corporation (NNPC) retains an all encompassing control over the industry through its shareholding in all the companies involved and in the setting of wholesale and retail prices.

Deregulation of the downstream energy sector remains a stated government aim. But this is likely to depend on the still heavily subsidised prices being allowed to rise to international levels. Many Nigerians regard oil as a gift from God and their natural right to enjoy on the cheap, a sentiment that will make any government rethink its commitment to more realistic prices by risking its future.

Demand / consumption

Domestic consumption is in the region of 11 million tons per year (300,000 bpd). Total demand is expected to increase at an average rate of 3.4% per year to about 14 million tons by the year 2000. Theoretically, Nigeria should be able to produce enough refined product for its domestic market. However, heavy subsidies, cross-border smuggling and poor refinery efficiencies have impelled it to import gasoline and other light products.

Product consumption/demand forecast (in tons) : 1990-2000

	1990	1995	2000
Gasoline	4 366 000	5 260 000	5 550 000
Kerosene	2 273 000	2 730 000	3 260 000
Gasoil	2 380 000	3 220 000	4 220 000
Fuel Oil	950 000	1 035 000	1 290 000
LPG	106 000	115 000	135 000
Total	10 075 000	12 360 000	14 455 000

Refining

Nigeria has 4 oil refineries at Kaduna, Warri and at Port Harcourt, with a total nominal refining capacity of 440,000 b/d although it is rare for throughput to reach this figure due to frequent breakdowns and operating problems. In

theory, Nigeria's refinery capacity is sufficient to meet its domestic consumption requirements. In practice however, the country has experienced frequent shortages of refined products since its refineries have poor configurations and operate inefficiently. Bottlenecks in the distribution infrastructure causing logistical problems in moving product also contribute to the frequent shortage of refined products in the domestic market. The skewed product slate of the refineries results in too much heavy products such as fuel oil and a shortage of lighter products specifically gasoline and jet fuel. Product prices are also heavily subsidised which has encouraged smuggling on a large scale to neighbouring states for re-sale at higher prices. It has been estimated that smuggling amounts to over 320,000 bpd largely to Benin, Niger, Chad and Cameroon. Nigeria has become a large importer of light petroleum products, in 1993 importing 2.945 thousand tons of refined product.

Distribution and Marketing

Distribution and marketing of fuels and lubricants products is undertaken by 5 international companies - Agip, Elf, Mobil Nigeria, Texaco Nigeria and Total Nigeria - and 3 domestic companies - African Petroleum, 40% owned by NNPC, (formerly BP who were ejected by the Nigerian government in 1979 for allegedly breaking the oil boycott against apartheid South Africa), National Oil (owned 40% by NNPC, 40% by Shell and 20% by private shareholders) and Unipetrol Nigeria (40% owned by NNPC). Total Nigeria, Mobil Nigeria, African Petroleum and National Oil are all separately listed on the Nigerian Stock Exchange. There are also some 750 other marketing "independents" who are licensed by NNPC to market petroleum products. Of the total market, the 3 domestic companies hold a 30% market share and 45% of the market excluding the independents. The independents have a market share of approximately 36% with General Oil being the leading independent marketer. Although NNPC is not engaged directly in the marketing of refined products, it has substantial ownership in all of the marketing companies and therefore is involved along the whole downstream chain. In 1993, a total of 11,415 thousand tons of product was marketed, of which 7,442 thousand tons was marketed by the 8 marketing companies and 3,973 thousand tons by the independents.

Marketers Competitive Position (1993)(excl independents)

Company	Retail	Consumer
Elf	7%	3.5%
Agip	10%	7%
Texaco	11%	6%
Mobil	14%	15%
Unipetrol	11.5%	14%
National Oil	13%	22%
African Petr	16%	17%
Total	17.5%	15.5%

Pricing & taxation

Since 1973, pricing has been controlled by the government at all levels in the industry. It regulates the transfer prices paid within NNPC and sets product prices at wholesale and retail level. The NNPC subsidiary, Pipelines and Products Marketing Company (PPMC) buys crude oil for the refineries at prices set by the government and then sells the refined products to the marketing companies. Retail prices are heavily subsidised. It is estimated that the government pays an amount of $2.5 billion in subsidies. Consequently, products are considerably cheaper in Nigeria than in neighbouring countries and cross-border smuggling of petroleum products from Nigeria has become a significant factor. Attempts to reduce the subsidy in line with World Bank recommendations have met with stiff resistance but were eventually forced through in September 1994.

These subsidy cuts have had a profound impact on the country's economy. Gasoline prices jumped more than 400% to 68 cents a litre from 16 cents, while household kerosene increased 450% to 54 cents a litre. Prices of foodstuffs, soap and detergents, and building materials have also risen by between 80 and 100% since the fuel price increase.

Distribution infrastructure

Refined petroleum products are transported from the refineries through pipelines, coastal (marine) vessels, road trucks and rail wagons to the 21 regional storage / distribution depots, spread across the country, from where the marketing companies obtain their supplies. These distribution depots, with a total capacity of 1,422,000 cubic metres, and the transportation system are owned and managed by NNPC through its subsidiary, the Pipelines and Products Marketing Company Limited (PPMC). The depots are linked to the refineries and port terminals by a 3,001

km network of pipelines in five systems. The PPMC is working on a scheme to establish an integrated pipeline network linking all 4 refineries to reduce inefficiencies in the distribution chain.

Overview of the Nigerian Gas Industry

With proven reserves in excess of 120 trillion standard cubic feet (tscf), Nigeria is more endowed with natural gas than with oil. In energy terms, Nigeria is a gas province, with an oil rim. Gas offers significant investment potential. Average annual production of gas (mostly associated gas) is around 1,059 billion standard cubic feet with about 75% of it being flared. Nigeria is the highest gas flaring nation worldwide. A number of factors, such as inappropriate gas pricing, absence of adequate gas infrastructure, low economic development and unstable macroeconomic environment are responsible for low gas utilisation in Nigeria.

The National Gas Policy is constantly reviewed to give clear fiscal incentives to encourage utilisation of, and investment in the natural gas sector. The Liquefied Natural Gas (LNG) project, with an estimated cost of 3.8 billion US dollars, is the biggest single gas project in Nigeria. The implementation of the project is on course and first deliveries are expected in last quarter of 1999.

There are over nine other on-going or planned gas projects in the country. The big ones include: Escravos Gas Project (EGP) with estimated cost of $600 million expected to come on stream by May 1997; the Oso NGL project is expected to cost $810 million with start-up in 1998; Soku Gas Plant with estimated cost of $748 million; and Agip/Elf Gas Supply to LNG Project with an estimated cost of $505 million. The proposed West African Gas Pipeline (WAGP) project will enhance the utilisation of abundant gas resources in Nigeria.

Natural gas is the energy of the future. Gas is forecast to be the fastest growing energy source in the world with about 1.9% demand growth per annum. Economic growth, supply availability, cost effectiveness and environmental benefits would drive gas demand into the 21st century. Global demand is expected to peak at 310 billion standard cubic feet per day in 2010.

Nigerian Gas Company (NGC), a subsidiary of the Nigerian National Petroleum Corporation has monopoly of supply of natural gas to the domestic economy. Its present gas infrastructure, including compression stations and pipelines are inadequate.

There are multiple areas of investment in the gas industry. Government is offering a number of fiscal incentives to investors in the industry under the National Gas Policy and Associated Gas Utilisation Fiscal Incentives (AGUFI).

Natural Gas Development in Nigeria

Natural gas development in Nigeria started about 1958, at the commencement of oil production. Initial steps to commercialise natural gas was made by Shell/BP in 1960 with an agreement to supply gas to some industries in Aba, in the South Eastern part of Nigeria, and to the state-owned power company, the Electricity Corporation of Nigeria (ECN), for its power station. Until recently, there had been no conscious efforts on the part of the oil companies to explore for and produce natural gas. Rather, as the gas-oil ratio is high in Nigeria's formation, gas fields are discovered during oil exploration and usually are not developed. Therefore, Nigeria's gas reserves remained largely unexplored and unexploited. This situation is now changing.

Gas production in Nigeria is undertaken by the oil majors (Shell, Chevron, Agip, Texaco, Mobil, Elf, Ashland and Pan Ocean), with Shell taking the lead. Shell produced about 503.9 billion cubic feet in 1995. The company has a 10 billion Naira sales and purchase agreement with the Nigerian Gas Company (NGC) to sell 250 Mmscf/d for the next 20 years. aThe company supplies about 95% of total market demand. Presently, Shell flares some 1,092 Mmscf/d of

its associated gas. There are a number of key gas projects that have been initiated by Shell. These include the project to supply gas to the proposed LNG project on Bonny Island, in which Shell has 25.6% equity. This is the Soku Gas Project. Capital expenditure of Shell's gas flare reduction is estimated at 1,856 million US Dollars by the year 2004. Mobil is the second largest producer of natural gas in Nigeria. The company produced about 302.3 billion standard cubic feet in 1995.

Natural Gas Utilisation in Nigeria

Africa currently accounts for the biggest share of flared gas, with a total of over 60 bcm flared in 1994, of which 23.7 bcm was flared by Nigeria alone in 1994. Substantial amounts of natural gas are also flared in other oil-producing countries. In 1994, Saudi Arabia flared 10.21 bcm; Iran 8.9 bcm; Algeria 6.2 bcm and Indonesia 5.75 bcm. A total of nearly 100 bcm of natural gas was flared world-wide in 1994. However, most OPEC members have made a substantial reduction in flaring since 1980.

To ameliorate this problem, the Government promulgated Decree 99 of 1979, cited as Associated Gas Re-Injection Decree. Under the provisions of the Decree, oil producing companies were expected to develop projects that will utilise their associated gas. The oil companies were given four years to comply with the provisions of the Decree, and gas flaring was to stop by January 1, 1984. However, lack of incentives for associated gas utilisation projects, coupled with absence of infrastructure for gas utilisation, made implementation of the Decree difficult. As at January 1, 1984, no oil company had executed an associated gas utilisation project of any significance, with the exception of the normal gas re-injection programs, designed to maintain well pressure and enhance oil recovery. In January 1984, the Nigerian government instituted a punitive regime of fines for associated gas flaring. Defaulting oil companies were fined a paltry 10 cents per 1000 standard cubic feet of gas. The NNPC picked up 60% of this fine as per its equity in the oil producing joint-ventures.

The gas supply facilities are located in fields in the operational areas of the JV companies in the Eastern and Western Niger Delta. These JV companies supply gas to the NGC, for onward sale to consumers. NGC's major gas supplier is the Shell/NNPC/Agip/Elf JV operated by Shell, which currently supplies almost all the gas sold by the NGC . The JV flares 28.6 million cubic metres of associated gas per day in the whole of the Niger Delta, for lack of a market and gas delivery infrastructure.

The greatest limitation to the expansion of gas supply sources to include gas from the other JV companies (Chevron, Mobil, Elf and Agip) is the absence of NGC pipelines in their operational areas, which for the first two, are mostly offshore. The NGC pipelines are presently concentrated in the Western Niger Delta. The largest pipeline, the Escravos-Lagos Pipeline (ELP) was initially designed to supply gas to a NEPA thermal station at Egbin near Lagos and to industries in the Lagos area. However, the ELP has vastly expanded its scope and is now supplying gas to industries along its route and is poised to form the Nigerian section of a West African Gas Pipeline network stretching initially to Ghana through the Benin Republic and Togo, but which could stretch all the way to Mauritania.

The total gas gathering, transmission and distribution pipeline network in Nigeria is about 1,000 km with an average design capacity of about 2 bscf/d. This is a far cry from the extensive integrated pipeline network which the nation requires to effectively utilise its gas resources. There is currently under construction, a pipeline to supply gas to a Federal Government-owned Aluminium Smelter (ALSCON) in Ikot Abasi, Akwa Ibom State. This pipeline is, however, sized to provide gas to industries along its route through the three Eastern states of Abia, Rivers and Akwa Ibom State.

Total demand for gas from the NGC in 1995 was 274.09 Mmscf/d. The demand is estimated to increase to 389.16 Mmscf/d in 1996, an increase of about 42%. Demand is expected to peak at about 805.22 Mmscf/d by the year 2000. The demand growth is being driven by cost effectiveness and the environmental benefits of using gas instead of alternative fuels. Users of natural gas can be classified into the following categories: power generation, industrial, and domestic and commercial. The demand for natural gas from NGC for power generation stood at 196.52 Mscf/d in 1995. The natural gas demand for power generation is mainly from National Electric Power Authority (NEPA). Industrial users of natural gas constitute the second major consumers. Gas demand for industrial uses stood at 77.57 Mmscf/d in 1995. This represented about 28.3% of the gas demand in 1995. Gas demand for industrial uses is expected to reach 45.6% of total gas demand by the year 2000. Gas demand by the industrial sub-sector is expected

to show a consistently increasing trend within the period, 1996-2000, with demand estimated at 367.26 Mmscf/d in 2000. There is currently no supply of natural gas for domestic and other commercial heating purposes in the country.

LPG Production & Utilization in Nigeria

Currently, all the LPG used in Nigeria is produced by the refineries. However, with the completion of Mobil/NNPC and Chevron/NNPC NGL fractionation plants in 1997/98, most of the nation's LPG may be sourced from these NGL plants due to the epileptic performance of refineries which are currently operating at about 40% of installed capacity.

The LPG market in Nigeria is small and characterised by irregular supply. It reached a peak of 109,000MT in 1990, and has been on the decline since then. There are two gas cylinders manufacturers. One is the Nigeria Gas Cylinder Manufacturing Company Limited, a subsidiary of Total Nigeria Plc. The plant has the capacity for some 300,000 cylinders per annum in one shift. However, about 30% of the installed capacity is utilized. The company is the leading gas cylinders manufacturer in the country. The second is Midgal/Setemec Gas Cylinders Limited, a subsidiary of Tower Aluminium.

The consumption of LPG has been consistently sliding since 1992. There was 12.1% decline in LPG demand in 1992 over 1991 level. The consumption of the product stood at 10,479 metric tons in 1995 which, when compared with 1991 level (55,661 tons), shows a decline of 81.2%. Depressed consumers' income is cited as the major factor accounting for the fall in LPG consumption during the period. Supply side constraints include the following frequent breakdown of the refineries and distributional facilities incessant power failure, among others Total, African Petroleum (AP) and Unipetrol, among them control 31% of the LPG market, while the independents control about 60%. Most of the gas majors and few independents have established gas filling centres where consumers and retailers can refill their gas cylinders. These facilities are limited to only large metropolitan areas. At the end of 1994, there were ninety-six (96) filling plants in the country

To encourage and achieve orderly development and consumption of LPG nationwide, the NNPC embarked on a butanisation programme. This will increase the flexibility of supply and ensure adequate supplies for sustaining expansion in LPG consumption, improve LPG distribution by minimising transportation distances. It would also provide strategic reserves with which to buffer supplies during disruption in production at the refineries production and to reduce the demand pressure on other liquid fuels e.g. automative gas oil (AGO) and fuel oil, and release them for export. As part of the butanisation programme, NNPC budgeted about $27 million for the procurement of gas cylinders from local suppliers.

Natural Gas Projects in Nigeria

1. NNPC/MOBIL (Oso) NGL Recovery Project
2. NNPC/CHEVRON NGL Project (Escravos Gas Project)
3. SPIL Methanol/MTBE Project
4. NNPC/MOBIL Methanol Project
5. ENERGO GAS (*NNPC/MF KENT*) Gas Project
6. NNPC/DRAKE OIL Project

Natural gas utilisation projects in Nigeria include the major LNG Project as well as gas utilisation projects such as the Natural Gas Liquids (NGLs) Projects. Natural Gas Liquids (NGLs) are those liquids which are derived from the processing of natural gas. Natural gas processing for NGL recovery involves the subjection of a natural gas stream to very low temperature either by mechanical refrigeration or automatically reducing its pressure. The NGL can be used as petrochemical feedstock, processed further to obtain LPG, or "spiked" (mixed) back into crude petroleum (as condensates) for export or local refining. All over the world, NGLs are receiving greater attention as a major source of energy. Annual global consumption is about 160 million metric tones (MT) which works out at 5 million barrels per day (MBD). United States is the largest consumer of NGL with a demand of over 2 Mmb/d. The United States Gulf Coast, with the extensive pipeline and storage infrastructures at Mont Bolvieu, Texas, could easily absorb 100% of Nigeria's Oso NGL.

1. Natural Gas Liquids (NGL) Projects

NNPC/MOBIL (Oso) NGL Recovery Project

The Oso NGL project located on Bonny Island in Rivers State is a direct off-shoot of the successful Oso Condensate development located offshore, about 42 kilometers from Mobil's Qua Iboe Terminal in Akwa Ibom State. It is one of the two NGL projects currently under implementation in Nigeria. The project is aimed at processing the natural gas from the Oso Condensate field and other sources in order to obtain NGL. When fully operational, the project will produce about 50,000 barrels per day (b/d) of mixed propane/butane that would be exported as LPG.

The project involves the construction of an offshore platform, a 42 kilometer pipeline to transport the gas to Bonny Island in Rivers State, and a fractionation plant in Bonny to process the NGL into propane, butane and pentane. The contract for the project has been awarded to the consortium of ABB Lummus Crest, JCC Corporation, Bouygues Offshore, Spie Batignolles and Fougerolle. The total project cost is estimated at $800 million. The project is expected to come on stream in 1998. The engineering activities relating to the project are progressing steadily at various contractors' offices. Financial commitment to the project in 1996 is estimated at $70 million.

NNPC/CHEVRON NGL Project (Escravos Gas Project)

This is a joint venture project between NNPC and Chevron (NNPC- 60%; Chevron- 40%) for the processing of 170 Mmscfd of associated natural gas from the NNPC/Chevron offshore Okran and Mefa fields in the Western Niger Delta. The project is designed to gather and compress associated gas which would be piped onshore to an extraction plant. The project design involves the installation of gas gathering and compression platform, a floating storage and off-loading vessel, an onshore gas plant and connecting pipelines. The NGL will be extracted from associated gas offshore using a turbo-expander process. NGL fractionation will be onshore and the product LPG, would be exported, while heavier liquids would be blended with Escravos crude oil. The dry gas would be sold to the Nigerian Gas Company (NGC) for processing to meet domestic demand. Construction and installation of major facilities would be completed in 1997. All pipelines would be installed in Escravos.

Modules, jacket fabrication and floating Storage and Offloading vessels (FSO) for the project would be produced, tested and launched in the United States and Japan. The basic engineering of the project was conducted by NETCO, an NNPC/Bechtel engineering joint venture. On the completion of the first phase (which will involve an expenditure of about $600 million), the project would produce about 130 Mmscfd of dry gas residue and 6,500 barrels per day of liquefied petroleum gas for sale. About 11,000 b/d of liquid hydrocarbon would also be realized from the first phase of the project which will be blended into the

Chevron's Escravos crude stream. The project will come on stream by mid 1997. The NNPC and Chevron have approved a budget of $276 million for 1996 and 1997 for the construction and completion of the project. Of the amount, $238.9 million would be spent in 1996, while $37.2 million would be used in 1997 to complete the project before May 1997.

2. Methanol Projects

In August and September 1991, the NNPC Board approved and directed the expeditious implementation of gas utilisation projects proposed by several project promoters. The most important of these proposals were methanol projects proposed by Mobil, Penspen and Standard Petrochemical Industries Limited (SPIL). All these projects were proposed to use abundant associated gas, currently flared, to produce fuel and chemical grade methanol for export. Other methanol projects have been proposed by Energo Gas. There is also a gas valorisation project, designed to convert natural gas to crude oil, by Drake Oil. Mobil also proposes an independent power plant project, involving the construction of a 350MW gas powered thermal power plant in Bonny, using some of the lean gas from the NNPC/Mobil Bonny Natural Gas Liquids plant. The power will be sold to the National Electric Power Authority (NEPA) for transmission into the national grid. The unique characteristics of the foregoing projects is that, unlike the other gas utilisation projects undertaken in association with the JV oil producers, these projects are proposed to be fully sponsored by the private sector, with the NNPC acting as a shareholder, independent of Government, in the commercial sense.

SPIL Methanol/MTBE Project

Methanol (derived from natural gas) has traditionally been used as a feedstock in the production of a variety of chemicals such as formaldehyde, acetic acid, several chlorinated hydrocarbons, methyl-amines and DMT. While methanol consumption will still be partially determined by these uses, the single most important factor determining the demand growth and price of methanol has become its use as a feedstock for methyl tertiary-butyl ether (MTBE). MTBE will account for approximately one-third of methanol demand by the turn of the century.

MTBE has become one of the fastest growing petrochemical products because of its value as an octane enhancing component for gasoline blending. With the widespread phase down of lead, increasing restriction on volatility and aromatics content, and more stringent air quality criteria (as in the recent amendments to the Clean Air Act in United States), MTBE is now an important component of the gasoline pool. By far, the largest market for gasoline is the United States, where there is the most advanced development and implementation of lead phase down and other environmentally driven cleaner fuels programs. Western Europe and Japan are the major demand regions for gasoline, and hence will also play key roles in determining future MTBE demand.

Of the four private sector sponsored natural gas utilisation projects, the most commercially and financially advanced, is the methanol/MTBE project sponsored by the Standard Petrochemical Industries Limited (SPIL). The Standard Petrochemical Industries Limited (SPIL), a private Nigerian limited liability company, in association with Ferrostaal AG, of Germany, ABB Lummus Crest Inc., Lurgi Gas and Mineroltechnik, Helm AG and Sun Oil Inc. proposed to design, construct and operate integrated Methanol/MTBE plants in partnership with the NNPC. The designated capacities of the plants are 680,000MT/Year and 500,000 MT/Year of methanol and MTBE respectively. SPIL Methanol/MTBE project equity shareholding is as follows: NNPC (30%), SPIL (30%), Ferrostal AG (20%), Methanex (20%).

NNPC/PENSPEN Methanol Project

On March 20, 1991, a consortium of Penspen (UK), Mannesman (Germany) and Bilfinger & Berger submitted a proposal for a three-phase gas utilisation project - Methanol, NGL and MTBE - to be constructed in the Western Niger Delta area of Nigeria. The proposal called for the initial execution of a 2,500 metric tons per day methanol project using the Imperial Chemical Industries (ICI) low pressure methanol process.

In November 1991, a Project Development Agreement (PDA) was signed between the NNPC and the consortium of Penspen Limited, Mannesman Anlagenbau AG/Kinetics Technology International and Bilfinger & Berger. The consortium submitted the feasibility study/investment plan for the methanol plant to be located at Escravos. The study showed that the capital cost of the project is US$442 million, with total financing requirement is US$ 533 million. The payback period is 3 years for the project, and 4 years for the total investment, and rate of return is 21.15% in real terms. A marketing agreement was secured with ICI in May 1992. The project implementation is currently awaiting an improvement in the political and economic environment in the country. In the meantime, the consortium has spent US$6.11 million in front-end engineering costs; NNPC's share is US$4.9 million.

NNPC/MOBIL Methanol Project

The NNPC/ Mobil methanol project is a 50:50 joint-venture between the NNPC and Mobil Incorporated of the USA. Mobil is one of the most important players in the methanol market. It developed the first natural gas-methanol-gasoline plant in the world, located in New Zealand. There is thus a ready market for any methanol produced in Nigeria by Mobil. Additionally, the company is the largest developer of gas utilisation projects in the Nigerian oil industry. Mobil is the developer of the Oso condensate field, which produces condensate for export and supplies the rich gas for the NNPC/ Mobil Natural Gas Liquids (NGL) extraction and fractionation plant currently under construction in Bonny, Rivers State. The proposed methanol plant is to use the lean gas from the NGL plant and produce 900,000 metric tons per annum of chemical grade methanol for export, using the ICI/John Brown methanol synthesis process. Phase 1 engineering has been completed by the M.W. Kellog Company. Feedstock requirement is 90 mmscf/day of Oso NGL residue gas. Total project cost is estimated at US$ 615 million. The discounted cash flow rate for the project is 18.1%. Investment incentives for the project include Investment Tax Credit (ITC) of 40%, and a capital allowance period of 5 years (consolidated with Petroleum Profit Tax at 65%). Import duty exemption on plant and materials is 100%. Natural gas price is fixed at US$0.52 per 1000scf for the first 10 years after start-up, and escalated at 4% per annum thereafter.

The methanol project implementation is awaiting the completion of the NNPC/MOBIL NGL plant in 1998; in addition, an improvement in the economic and political environment of the country is an imperative for the success of the project.

ENERGO GAS (NNPC/MF KENT) Gas Project

This project proposes to use associated gas to produce fuel-grade methanol for export, using small skid-mounted methanol synthesis plants. The project was to start with 3 (three) skid mounted plants with a capacity for 250,000 metric tons of fuel-grade methanol per annum, using gas from the NNPC/Ashland Oil Company Izombe gas flare in Imo State. Project economics show a payback period of 2.64 years and discounted cash flow's return on investment of 38.7%. The proposed equity shareholding shows NNPC (30%), MF Kent (W.A.) (35%), Kent Steel (35%). The project is being reviewed by NNPC management.

NNPC/DRAKE OIL Project

This project is similar in technology (PLASMA) to the ENERGO GAS project but by a different route. Drake Oil Limited, a Nigerian company and their partners entered into an Agreement with the NNPC to convert flared gas into synthetic crude oil to be spiked back into existing crude streams. NNPC has a non-contributory 20% equity, while Drake and their partners have 80%. Other gas projects undertaken by the NNPC in joint ventures with the major oil companies as part of the existing JV agreements areas follows: The Edop Gas Injection Project, an NNPC/Mobil joint venture costing 80.262 million US dollars; the Ekpe Gas Compression Project, another gas-based project in the NNPC/Mobil joint venture, estimated at $183.7 million. The Ubit Gas Injection Project is to expand the production capacity of the Ubit oil field through gas re-injection. Total project cost is $84.7 million. Others are the Soku Gas Plant Project, an NNPC/Shell joint venture project with the objective of gathering associated and non-associated gas from various Shell fields and supplying it to Nigeria LNG for liquefaction and export. The total cost of the project is estimated at $748 million. Another NNPC/Shell project is the 239 million US dollar ALSCON Gas Supply project, to gather gas produced which hitherto has been flared by SPDC and process it for direct supply to the Aluminium Smelter Company (ALSCON) and other industries in the eastern part of the country. The total

cost of the project, which is being executed by Saipem, is estimated at $239 million. The project was commissioned in June 1996.

The Nigerian LNG Project

The Nigerian LNG project originally began in March 1985. A framework of Agreement was signed in November of that year between the NNPC, Shell Gas BV, Cleag Bermuda (ELF) and Agip International BV, with Shell as the technical partner, because of its vast international experience. Equity structure of the project is as follows: NNPC (49%), Shell (25.6%), Elf (15%), Agip (10.4%).

Scope of the Project: The Nigerian LNG project consists of the construction and operation of a new 5.7 million metric tonne per annum capacity liquefied natural gas plant. The project will include a two-train liquefaction plant producing about 7.23 billion cubic meter of LNG per annum, a 218 km gas pipeline system linking the plant to the gas fields at Soku, Obiafu/Obrikom, Ibewa/Obiagi, Idu and Ubeta, all located in the Eastern Niger Delta, associated utilities, storage/loading facilities and other infrastructure, six ocean going cryogenic vessels; and residential quarters for NLNG project staff.

Total project cost is estimated at 3.8 billion US Dollars, of which 0.5 billion US Dollars has already been spent on the acquisition of four LNG ships and pre-implementation expenses. The EPC contract was awarded to the contractor-consortium of TSKJ -Technip, Snamprogetti, Kellog and JGC in December 1995. An indigenous company- National Engineering and Technical Company Limited (NETCO) has been appointed as a subcontractor. It is expected to provide engineering support services to the main contractor-TSKJ in the area of detailed engineering. NETCO is a 60/40 joint venture between the NNPC and BECHTEL of the US. All the LNG will be sold through firm 22.5 year sale agreements which include specific take or pay clauses. Delivery prices escalate from an agreed base value according to indexation formulas linking alternative energy values and other factors in the European gas market. The major share of the production volume (48.95%) has been contracted to ENEL, the Italian state electricity company, while the remaining volume has been sold to the following gas companies:Enargas of Spain (22.38), Gaz de France (6.99%), Botas (12.99%), leaving about 9.09% of uncommitted volume.

LNG Shipping Arrangement: The Bonny Gas Transport Limited (BGT), a subsidiary of the Nigerian LNG, was incorporated in Bermuda in 1979 and charged with the shipping service for the project. All the four ships owned by the BGT are registered in Bermuda. The management of the LNG vessels has been contracted to Shell International Trading and Shipping Company Limited (STASCO). Six out of the seven ships required with cargo capacities in the range of 122,000-133,000 cubic meters have been acquired. These include two vessels, Lake Charles and Louisiana, on time charter from Lachmar, a division of Pan Ocean of the US.

NLNG project Gas Supply Arrangement: The project feedgas will be supplied from designated gas fields of joint ventures based on a June 26, 1992 agreement with the Nigerian LNG Limited. A request for additional feedgas, to meet an estimated 30% LNG production volume increase arising from the adoption of APCI's liquefaction process technology, has been made to the gas suppliers. The feed gas required for the project is about 26.6 million standard cubic meters per stream day at maximum plant operation.

The Nigerian LNG Project and Environmental Issues: The various environmental impact assessments undertaken for the LNG project since 1989 have been in conformity to relevant regulatory framework in Nigeria and the borrowing requirements of the IFC which previously has a 2% stake in the project. The regulations are in the Federal Environmental Protection Agency (FEPA) Decree #58, of 1988, the National Guidelines and Standards for Environmental Pollution Control in Nigeria (1991) and the Environmental Impact Assessment (EIA) Decree 86 of 1992. At the end of 1995, certification of impact assessment was granted to the LNG project by FEPA. Other gas-based projects are in the process of obtaining obtaining necessary certification. There is a concern about the incidence of environmental degradation in the Niger Delta, a region of about 70,000 square kilometres that is considered the largest wetlands in West Africa and a complex eco-system. Partly as a result of heightening environmental concern, most operators in this region are standing up to recognise their responsibility.

Natural Gas Policy

Currently about 75-80% of associated natural gas is still flared, representing an enormous loss of economic and environmental benefits, while 25% is utilised as fuel gas in the field, sold to industries or re-injected. In absolute terms, about 2 billion standard cubic feet of associated gas is estimated to be flared daily. Nigeria is on top of the list of gas flaring nations among the OPEC members.

In view of the limited domestic market for gas and the high cost associated with gas development, the oil companies could not embark on effective gas utilisation and development program. A review of the 1979 Associated Gas Re-Injection Decree was necessary. This came in form of the Associated Gas Re-Injection (Continued Flaring of Gas Regulations 1984), which sets out the conditions for the issuance of Certificate by the Minister under section 3(2) of the previous Decree of 1979, permitting the continued flaring of gas.

The Associated Gas Re-Injection (Amendment) Decree #7 of 1985 permitted a company to continue to flare gas in a particular field or fields if the Minister issues a certificate to that effect and if he is satisfied after January 1, 1984 that gas utilisation or re-injection of the produced gas is not appropriate or feasible in that particular field or fields. The certificate enabled the company to continue to vent and flare gas if the company paid such sum as the Minister prescribed from time to time for every 28.317 standard cubic metre of gas flared, payable in hard currency. The 1995 review of the national gas policy increased the penalty for gas flaring to 50 Naira for every 28.32 standard cubic meter (equivalent to 1,000 cubic feet) of gas flared, as against 0.50 Naira for the same quantity, under the previous policy. The current policy states clearly that gas flaring shall stop in the year 2005, prior to which time, there would be a gradual termination of flaring.

The growing concern about the utilisation of natural gas has made the Government to introduce associated gas utilisation clauses in recent production sharing contracts (PSCs) signed with oil companies. This is in line with current practice in other major oil producing countries and in compliance with international environmental standards.

The main thrust of the gas policy in the gas production phase is to eliminate gas flaring and encourage producers to make capital investment in the production phase. To facilitate the realization of these objectives, gas producers are to carry out gas field development optimisation study on their respective concessions while NAPIMS would be solely responsible for overall optimisation planning of gas field development irrespective of concession holder. There are incentives spelt out in the Associated Gas Utilisation Fiscal Incentives (AGUFI) to make attractive the additional investment a gas producer would make to deliver flared gas to any interested user at the producer's battery limit.

The objective of the gas policy in the transmission phase is to facilitate construction, operation and maintenance of an integrated national supply system, that would guarantee regular supply to end users through the development of a national grid system. There is no national gas grid system, which is essential in the development of mature gas market.

The national gas policy makes the transmission system a fully commercial operation in the hands of the private sector investors (both foreign and local) who take gas from the transmission companies at designated city gates in the urban locations. The NGC sells gas to these utility companies on commercial terms. The Department of Petroleum Resources (DPR) is responsible for the issuance of license and also enforces the approved codes and standards for safe operation of the gas companies.

Overall, the Government has given clear indications that it seeks to diversify revenue base from oil through efficient and effective management of natural gas resources and promote commercial utilisation. The continuing strategies have included initiating new and reviewing existing gas policies, fiscal incentives and pricing policies to attract investments to the gas sector, effective and efficient marketing of gas produced and the promotion of gas utilisation

Investment in the Nigerian Gas Industry

The Nigerian gas industry offers opportunities for investment. Some projects have already started operation while a few are in the implementation stage. Investment in the gas industry is capital intensive with a long gestation period.

Nigeria needs to address factors that have hindered the commercialisation and utilisation of this energy source. These factors include a pricing regime which has served as a disincentive to private sector investment. Other factors are the lack of infrastructure for gathering and processing as well as the absence of an integrated pipeline grid that will bring quality gas from production centres to user-industries.

There are various investment opportunities in both the upstream and downstream sector of the gas industry that can be of interest to prospective investors. The potential investment areas include the following:

LPG Mobile Filling Stations: The Nigerian Gas Company Limited (NGC) has yet to put in place an integrated distribution network grid (pipelines) that links LPG producers to the consumers. In the absence of this kind of distribution network, there exists a niche for mobile filling stations that will link consumers to storage depots.

Compressed Natural Gas Facilities: Natural gas can be used as automotive fuel in the form of Compressed Natural Gas (CNG). This is being used in a number of countries. In Nigeria, the Nigerian Gas Company has, through a pilot scheme, demonstrated the technical feasibility of a CNG-powered car. A variety of investment opportunities that exist in CNG include the production of conversion kits for cars and trucks, and building of CNG filling stations for vehicles.

LPG Accessories: Investment opportunities exist in the gas industry for the manufacturing of LPG accesories such as valves, cylinders' regulators, filling heads, pig tails, cylinders, gas burners etc.

Mini-Fertilizer Plants: Private investors can set up mini ammonia fertilizer plants of about 100 tons per day to take advantage of abundant associated gas in the country. Due to their usually modular design, mini fertilizer plants are cheaper to build, require shorter construction time, and generally reach their design output in a much shorter time after initial start-up.

Materials Supplies: Investment opportunities also exist in the gas industry for the supply of equipment, spare parts and chemicals for gas treatment, gas-lift and gas re-injection projects. There are various gas projects going on in the country presenting opportunities for supply of equipment and spare parts.

Methanol/MTBE Plants: Good investment opportunities exist for Methanol/MTBE. MTBE has become one of the fastest growing petrochemical products because of its value as an octane enhancing component for gasoline blending.

Power Generation: Power generation is perhaps the most single potential avenue for utilising the nation's abundant associated gas which is currently flared. Power generation is a high volume gas consumer.

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Extracts from http://www.nigerianoil-gas.com/

OIL INDUSTRY PROFILE

The Oil Industry, is the backbone of the Nigerian economy, accounting for over 90% of total foreign exchange revenue. Estimates of the total crude oil reserves vary, but are generally accepted to be about 22 billion barrels. Current daily production has been reduced recently, to about 1.8 million barrels per day, but has peaked at about 2.3 million barrels per day. As a member of OPEC, the global oil cartel, the reduction in the Nigeria's production quota was in response to the weakness in the global price of crude oil during the latter part of 1998 and early 1999.

Most of Nigeria's crude oil production, comprising 10 major crude streams (including condensate), is light sweet crude, API grades 26-40, with a low sulphur content. Nigeria's marker crudes on the International oil market are Bonny Light and Forcados. All of the crude oil in Nigeria comes from numerous, small, producing fields, located in the swamps of the Niger Delta, and product i exported through 7 terminals, and a number of floating production vessels. There are about 606 fields, most with less than 100 million bbls of extractable reserves. Numerous other fields are known throughout the Niger Delta, and some of the marginal fields have become the focus of a longstanding debate over their possible reallocation to small private local companies.

Current Government policy is to raise total reserves to 25 billion barrels, by the year 2000. While this is technically feasible, the industry has been beset by the inability of the Nigerian Government, who are majority shareholders in a number of joint-venture companies which operate the various concessions, to pay its share of required capital spending. Subsequently, budget levels required to achieve the stated objectives have not been approved. However, in July, 1998, following the death of the former Nigerian Military Head of State, General Abacha, the new government, moved swiftly to settle outstanding payments to the joint venture partners, and also approved increases to the 1998 oil industry budgets. Current signs are that the industry may suffer fewer payment delays in future.

In June 1999, a new democratically elected government, led by President Olusegun Obasanjo, was inaugurated. Much hope is vested in the new government, and early signals support the view that the new team mean business. The oil sector will be headed by a special adviser in the office of the president, the former OPEC chief Rilwanu Lukman. Well respected internationally, his appointement was a major boost of confidence for Nigeria's partners. A new Managing Director has also been appointed for the Nigerian National Petroleum Corporation, (NNPC) in the person of Gaius-Obaseki. A major shake-up of the NNPC is already taking place.

UPSTREAM

The industry is dominated by 6 major joint venture operations managed by a number of well known multinationals, Shell, Mobil, Chevron, Agip, Elf, and Texaco. The production concessions are managed through joint venture companies, in which the Nigerian Government, through the Nigerian National Petroleum Company (NNPC), holds about 60% shareholding. The foreign joint venture partners manage the operations, under a joint equity financing structure regulated by a Joint Operating Agreement. All operating costs are financed jointly, by a system of monthly cash-calls. A Memorandum of Understanding (M.O.U.) defines the commercial agreement between the partners and the government.

A small production sharing operation, previously managed by Ashland, has now been taken over by Total. Apart from the major joint venture operations, a number of private Nigerian firms have been awarded concessions, and most have been involved in the exploration of their blocks over the past 2-3 years. 3 of the firms have commenced production-Amni International, Dubri Oil Limited, and Consolidated Oil. The government plan to press ahead with more local investment in the oil sector, and have issued directives guiding the development of 'marginal fields' comprising small, abandoned fields, which have remained undeveloped by their joint venture partners. Offshore companies have been invited to participate in the development of these fields.

The last few years have been a difficult period for Nigerian Upstream oil sector-political problems brought on by the hanging of the activist, Ken Saro-Wiwa, cash-call problems with the Government, budget cuts, and the continuing problems with the host communities in the Niger Delta area. Despite all of this, given the important role that this sector plays in the economy of Nigeria, the business of oil continues.

The new democratically elected government in Nigeria, has indicated their resolve to press ahead with policy objectives to enhance Nigeria's production capability to 4 million bbls/day by the year 2010, and to increase reserves to 40 billion barrels. A restructuring of the NNPC is being undertaken to ensure that the company can meet these objectives. Considerable interest is again being generated in the Nigerian oil industry, and a major marketing effort will be undertaken by government in the next 18 months to highlight the opportunities within the sector.

DOWNSTREAM

The refining, petrochemical, and transportation sectors of the oil industry in Nigeria, are controlled by government and indigenous operators, and is an area in which government has made considerable investment over the years. The downstream sector is beset by a non-commercial pricing environment, and lack of resources to maintain and manage the infrastructure properly.

The focus of the government's policy on the downstream sector can be summarised as follows:
To maintain self-sufficiency in refining

A need to ensure regular and uninterrupted domestic supply of all petroleum products at reasonable prices
To establish infrastructure for the production of refined products for export.

The oil marketers in the downstream sector in Nigeria are divided into two segments: the majors and the independent nigerian marketers. Currently, the independent marketers number over 500, with a market share of less than 30%.

The downstream sector has been a major problem for the country over the past 3-4 years, as the NNPC has found it impossible to maintain the country's 4 refineries, and to provide adequate supply of pms, diesel, and kerosine nationwide. The NNPC recently completed the 3rd phase of their national pipeline distribution system, however large segments of the distribution system are in urgent need of maintenance.

Two of the country's refineries at Kaduna and Warri, have petrochemical plants which utilise refinery by-products to produce carbon black, polypropylene, linear alkyl benzene, and a host of other products. It is recognised that for an Olefin-based petrochemicals plant to be viable in Nigeria, it must be developed by cracking natural gas liquids in the Olefins plant.

NATIONAL GAS POLICY

It is estimated that about 2 billion standard cubic feet of gas is currently being flared in Nigeria, the highest among OPEC countries. Efforts to reduce the volume of gas flared are starting to reap dividends, with projects such as the LNG facility, the Escravos gas gathering plant, the Natural Gas Liquids plant at Bonny, and the recent establishment of Shell Gas Nigeria Limited.

Government has been concerned about the very high volumes of associated gas being flared in Nigeria, with the environmental hazards posed, and the loss of a valuable natural resource. In 1995, the Government reviewed the existing National Gas Policy, increasing the penalty, which the oil producers had to pay on every cubic foot of gas flared. The main thrust of the policy is to ensure that gas flaring shall stop by the year 2005. The recent Production Sharing Contracts signed with the various oil companies who were awarded new blocks, now includes gas utilisation clauses. Gas producers are to carry out gas field optimisation studies on their respective concessions while the government agency NAPIMS would be responsible for overall optimisation planning of gas field development. Incentives are also offered under the Associated Gas Utilisation Fiscal Incentives, in an effort to put in place investment required to transport gas to interested third parties.

Critical to the development of a domestic market, is the establishment of a national gas grid system. This will require the construction of pipelines and depots, to support a national supply system. The National Gas Policy places the responsibility for the transmission system on the private sector. Utility companies are required, who will take gas from established 'city gates', and will then service private users. The gas will be bought from the Nigerian Gas Company (NGC), the NNPC subsidiary with overall responsibility for gas development in the country.

NNPC OPERATOR AGREEMENTS

Two main types of agreements are currently operated between NNPC and its various investor partners. A summary of the two is shown below:

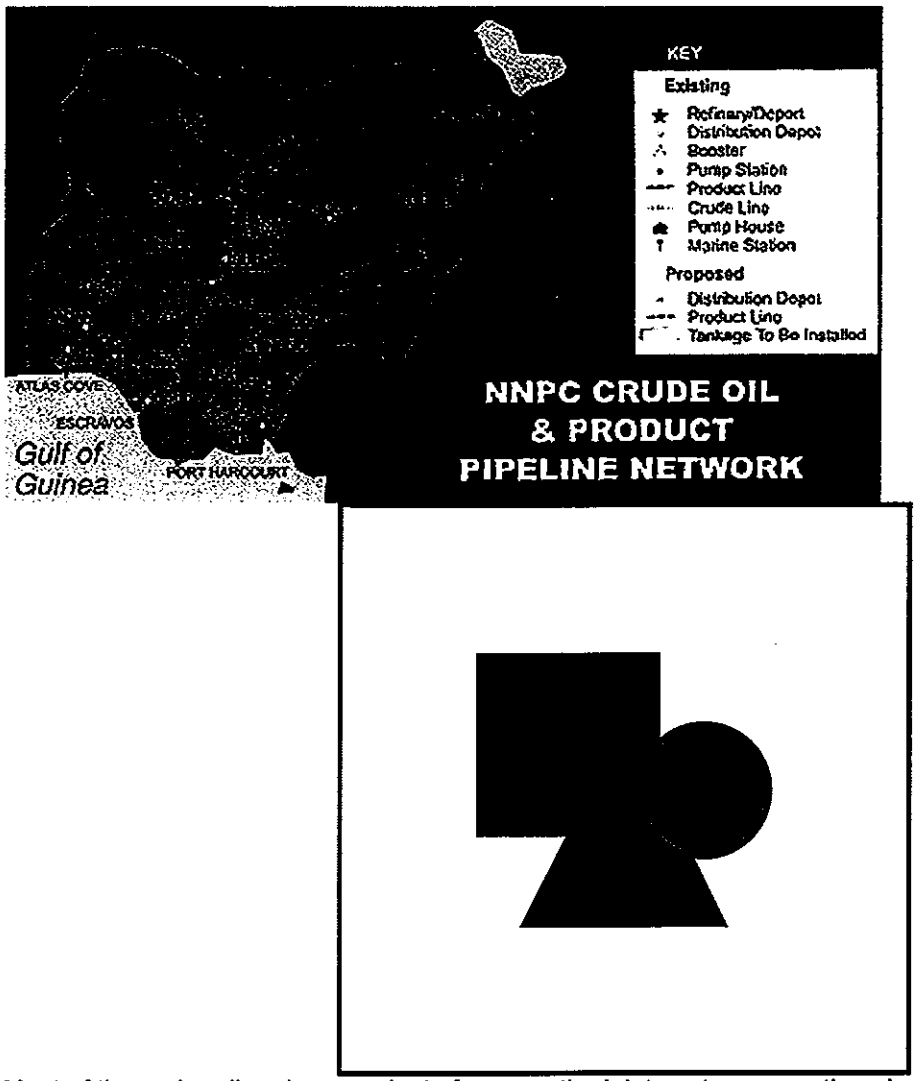
JOINT OPERATING AGREEMENT PRODUCTION SHARING CONTRACT

1. Partners share in the cost of petroleum operations in the proportion of their equity shareholding.	1.The contract areas for the OPL's, are located in deep offshore or inland basin.
2. Each partner can lift and separately dispose of its interest share of crude oil production, subject to payment (to Government) of petroleum profits tax, and royalty.	2. The term of the P.S.C. is for a period of 30 years, inclusive of a 10 year exploration period.
3. One of the partners is designated as the operator of the joint venture.	3. The contractor bears all the cost of exploration, and if oil is found, also bears the cost of subsequent development and production operations. If no oil is found, the contractor is not reimbursed for exploration expenses.
4. The operator prepares and proposes programmes of work and budget of expenditure, for approval by NAPIMS, the major shareholder.	4. Crude oil produced is allocated as follows Tax Oil - This is to offset tax, royalty, and concession rentals due to the Government -Cost Oil - This is for reimbursement to the contractor for capital investment and operating up to certain limits. -Profit Oil - The balance after deduction of tax oil and cost oil elements, will be shared between the contractor and

	NNPC.
5.The operator has freedom of action in specific matters, and Each party can opt for, and carry out sole risk operations..	
6. The contractor pays no corporate tax on its profit.	
7. NNPC reserves the right to become operator	
8. The commercial aspects of the agreement are covered in the Memorandum of Understanding (M.O.U.) The current M.O.U. provides the companies: A guaranteed minimum profit of $2.30 per barrel after tax and royalty on their equity crude. A reserves addition bonus, in any year that a company's addition to oil and condensate ultimate recovery exceeds production for that year.	

THE NIGERIAN NATIONAL PETROLEUM CORPORATION

The Nigerian National Petroleum Corporation was formed in 1977 through the merger of some of the departments of the Ministry of Petroleum Resources, and the old Nigerian National Oil Corporation. The Corporation has sole responsibility for upstream and downstream developments, and is also charged with regulating and supervising the oil industry on behalf of the Nigerian Government. In 1988, the corporation was commercialised into 12 strategic business units, covering the entire spectrum of oil industry operations: exploration and production, gas development, refining, distribution, petrochemicals, engineering, and commercial investments. The subsidiary companies include:
National Petroleum Investment Management Services (NAPIMS)
Nigerian Petroleum Development Company(NPDC)
The Nigerian Gas Company(NGC)
The Products and Pipelines Marketing Company(PPMC)
Integrated Data Services Limited(IDSL)
Nigerian LNG limited(NLNG)
National Engineering and Technical Company Limited(NETCO)
Hydrocarbon Services Nigeria Limited(HYSON)
Warri Refinery and Petrochemical Co. Limited(WRPC)
Kaduna Refinery and Petrochemical Co. Limited(KRPC)
Port Harcourt Refining Co. Limited(PHRC)
Eleme Petrochemicals Co. Limited.(EPCL)
In addition to these subsidiaries, the industry is also regulated by the Department of Petroleum Resources(DPR), a department within the Ministry of Petroleum Resources. The DPR ensures compliance with industry regulations; processes applications for licenses, leases and permits, establishes and enforces environmental regulations. The DPR, and NAPIMS, play a very crucial role in the day to day activities throughout the industry.



Most of the major oil and gas projects focus on the joint venture operations in which NNPC is the major shareholder, and the deep offshore development program, being carried out under production sharing contracts. All development plans for such projects must be approved by NNPC. There are other projects which the corporation develops primarily in areas of products distribution (pipelines, depots), refining, and petrochemicals. Current projects being handled by subsidiaries of NNPC, include the gas supply pipeline to the Aluminium Smelter plant in Ikot Abasi, and the Bonny Export Terminal.

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Nigeria to increase gas reserves
September 14 1999
The new Managing Director of the NNPC, Mr. Gaius-Obaseki, has restated government's resolve to make gas exploration and exploitation one of its main priorities over the next decade. The NNPC boss, was quoted as saying that Nigeria is likely to increase gas reserves significantly, principally as associated gas, with the major oil developments planned over the next few years. He was making an appeal for indigenous and foreign investors to support the various government initiatives aimed at developing the domestic and export markets for gas.
Obaseki indicated that government would create an enabling environment and infrastructure for the development of gas to electricity projects, compressed natural gas projects for vehicular use, and projects aimed at increasing the domestic and industrial use of natural gas. He also indicated that the refineries would be able to satisfy the products requirements of the country by the end of the year 2000.

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New directors appointed for NNPC subsidiaries
August 25 1999

As part of an ongoing excercise to restructure Nigeria's State owned oil company, the Nigerian National Petroleum Corporation (NNPC), the Government has approved the appointment of new managing Directors for a number of NNPC subsidiaries. The new Managing Directors are:

Mr. M Ofurhie- -Nigerian Gas Company
Dr. F.O. Ayoola -Nigerian Petroelum Development Company
Eng. E. Idahosa -Port Harcourt Refinery Company
Dr. L.A. Dennar -Eleme Petrochemical Company Limited
Mr. S. Adetunji -National Petroleum Investment Services(NAPIMS)
Dr. W. Ayangbile -Warri Refinery and Petrochemicals Limited.

The new appointees are all part of a new team being put together by the new Managing Director of the NNPC, Mr. Jackson Gaius-Obaseki.

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JUNE 1999

All the news that's fit to publish..... We collate news from the industry and government in Nigeria, as well as all the International news from OPEC and the Oil Majors, to provide you with up to date information affecting your business in Nigeria.

APPROVAL AWAITED FOR AMENAM-KPONO DEVELOPMENT
Elf Petroleum is still awaiting government approval for the development of the Amenam-Kpono field. The project, a joint Mobil-Elf development, requires a go-ahead from government for "alternative funding". Under this proposal, all or part of government's share in the project would be funded by commercial loans. This funding method was proposed in response to the difficulties that the government has had in meeting cash-call obligations.

CHEVRON-SASOL SIGN GAS-TO-LIQUIDS AGREEMENT
Chevron and Sasol have signed an agreement for a joint venture, combining their joint gas-to-liquids technologies. The companies believe that the GTL technology will become the preferred method for the commercial exploitation of natural gas resources. The first GTL project being planned is to be located in Nigeria. Design and engineering are under way, for the facility which will convert natural gas into synthetic crude. The plant is scheduled to produce 30,000 barrels per day when it comes on stream in 2003.

DEVELOPERS NAMED FOR WEST AFRICAN GAS PIPELINE PROJECT
6 companies have been named as the joint developers for the $700 million West African Pipeline Project. A committee including ministers representing Nigeria, Togo, Benin Republic and Ghana, Have listed the national gas companies of the 4 countries, Chevron, and Shell, as co-developers on the project.
The committee appraised the feasibility study prepared by a German consultancy firm which confirmed the viability of the 600 km pipeline project. The committee also endorsed the provision of a tax holiday for the project group, including customs duty waivers. Chevron officials confirmed that the project was scheduled for start up in 2002.

NIGERIA TO ESTABLISH OIL & GAS EXPORT FREE ZONE
The Nigerian Government is to establish an oil & gas export free zone. The idea is to provide a location from which oil and gas industries could produce, and sell products and services to the west african region. Goods entering the zone would not be subject to pre-shipment inspection, and would be exempt from duties and export permits. No specific timeframe has yet been indicated for the establishment of the export free zone.

NIGER DELTA SPECIAL PROJECT DIVISION SET UP
A presidential Special Project Division (SPD) on the Niger Delta region has been created to produce a comprehensive masterplan for the physical and social development of the crisis-prone area.

The SPD, according to him, would be manned by a Special Adviser who is yet to be named and will require the services of regional masterplanners of international repute form within and outside the country. A statement from the Presidency asked prospective masterplanners to forward proposals with verifiable experience in producing comprehensive regional masterplans in terrain similar to the Niger Delta region.

NNPC GETS NEW CHIEF EXECUTIVE
Mr. Jackson Gaius-Obaseki has been named as the new Managing Director of the Nigerian National Petroleum Corporation (NNPC). The new NNPC boss has been given a mandate to reform the moribund corporation, and has

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FT African Energy October 1999-11-05

Nigeria: Agbami development soon
Texaco is moving ahead with plans to develop its deep-water Agbami discovery, 70 miles offshore in Block 216.

If Agbami gets the go-ahead, it would be only the second deep-water development to get under way in Nigeria, behind Shell's giant Bonga scheme.

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Extract Oil & Gas Journal 25th Oct 1999 p30

Gaz de France to take first Nigeria LNG

The first cargo of LNG from Nigeria LNG Ltd.'.s Bonny Island Liquefaction plant arrived at Gaz de France's Montoir de Bretagne terminal on Oct 19.

The LNG Lagos carrier delivered the shipment, which is intended for Italy's ENEL. Under the terms of a contract signed between GdF and ENEL in 1997, over the next 20 years, GdF will receive at Montoir 3.5 million m3/yr of natural gas purchased by ENEL from NLNG

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1998 Worldwide Refining Survey

Marilyn Radler
Survey Editor

All figures in barrels per calendar day

All figures are as of 1-1-99

LEGEND
Numbers identify processes in table

Coking
1. Fluid coking
2. Delayed coking
3. Other

Thermal Processes
1. Thermal cracking
2. Visbreaking

Catalytic Cracking
1. Fluid
2. Other

Catalytic Reforming
1. Semiregenerative
2. Cyclic
3. Continuous regen.
4. Other

Catalytic Hydrocracking
1. Distillate upgrading
2. Residual upgrading
3. Lube oil manufacturing
4. Other
c. Conventional (high-pressure) hydrocracking: (>100 barg or 1,450 psig)
m. Mild to moderate hydrocracking (<100 barg or 1,450 psig)

Catalytic Hydrorefining
1. Residual desulfurization
2. Heavy gas oil desulfurization
3. Catalytic cracker and cycle stock treatment
4. Mid distillate
5. Other

Catalytic Hydrotreating
1. Pretreating cat reformer feeds
2. Naphtha desulfurizing
3. Naphtha olefin or aromatics saturation
4. Straight-run distillate
5. Pretreating cat cracker feeds
6. Other distillates
7. Lube oil "polishing"
8. Other

Alkylation
1. Sulfuric acid
2. Hydrofluoric acid

Polymerization/Dimerization
1. Polymerization
2. Dimerization

Aromatics
1. BTX
2. Hydrodealkylation
3. Cyclohexane
4. Cumene

Isomerization
1. C_4 feed
2. C_5 feed
3. C_5 and C_6 feed

Oxygenates
1. MTBE
2. ETBE
3. TAME
4. Other

Hydrogen
Production:
1. Steam methane reforming
2. Steam naphtha reforming
3. Partial oxidation
a. Third-party plant
Recovery:
4. Pressure swing adsorption
5. Cryogenic
6. Membrane
7. Other

FOOTNOTES
A Previously listed as Sonatrach.
B Flexicoking.
C Dewaxing.
D Deasphalting.
E Previously listed as Ampol Refineries.
F Semi-cyclic.
G LCGO.
H Houdry.
I FCC pretreat.
J Mid distillate dewaxing.
K Solvent extraction.
L Previously listed as Ervin.
M TCC.
N High conv. soaker cracking.
O Previously listed as Schmierstoff Raffinerie.
P Previously listed as Beta Raffineriegesellschaft Wilhelmshaven mbH.
Q Previously listed as EKO-Hellenic Refineries & Chemicals.
R Steam LPG reforming.
S LPG.
T Eureka.
U Estimate.
V RCC.
W Isomax.
X Demex.
Y Residue.
Z ROSE.
AA MEK dewaxing.
BB Previously listed as Hanwha Energy Co. Ltd.
CC Previously listed as Yukong Ltd.
DD Integration of Shell Co. of Thailand and Star Petroleum Refining Co. refineries.
EE VGO.
FF FCC feed.
GG Previously listed as Texaco Refining & Marketing Inc.
HH Previously listed as Shell Martinez Refining Co.
II Previously listed as Star Enterprise.
JJ Previously listed as Shell Norco Refining Co.
KK Previously listed as Petro Source Refining Partners.
LL Previously listed as Mobil Oil Corp.
MM Previously listed as BP Oil Co.
NN Isocracker.
OO HOC.
PP Previously listed as Howell Hydrocarbons & Chemicals Inc.
QQ Previously listed as Crysen Refining Inc.
RR Previously listed as Shell Anacortes Refining Co.
SS Paraffin wax.
TT Previously listed as BHP Hawaii Inc.
UU Previously listed as Mapco.

Capacity expressed in barrels per calendar day (b/cd) is the maximum number of barrels of input that can be processed during a 24-hr period, after making allowances for the following:
- Types and grades of inputs to be processed.
- Types and grades of products to be manufactured.
- Environmental constraints associated with refinery operations.
- Scheduled downtime such as mechanical problems, repairs, and slowdowns.

Capacity expressed in barrels per stream day (b/sd) is the amount a unit can process when running at full capacity under optimal feedstock and product slate conditions. Most U. S. capacity figures have historically been reported in b/sd, but all capacities are reported in b/cd here, as they will be in following years.

Totals
When an asterisk (*) appears beside a refinery location, this indicates that the figure has been converted from b/sd to b/cd by using the conversion factor 0.95 for crude oil and vacuum distillation units, and 0.90 for all downstream cracking and conversion units. Refining processes not covered are noted here.

Process definitions
- Hydrocracking includes processes where 50% of the feed or more is reduced in molecular size.
- Hydrorefining includes processes where 10% of the feed or less is reduced in molecular size.
- Hydrotreating includes processes where essentially no reduction in the molecular size of the feed occurs.
- Hydrogen volumes presented here represent either generation or upgrading to 90+% purity.

Catalytic reforming definitions
- Semiregenerative reforming is characterized by shutdown of the reforming unit at specified intervals, or at the operator's convenience, for in situ catalyst regeneration.
- Cyclic regeneration reforming is characterized by continuous or continual regeneration of catalyst in situ in any one of several reactors that can be isolated from and returned to the reforming operation. This is accomplished without changing feed rate or octane.
- Continuous regeneration reforming is characterized by the continuous regeneration of part of the catalyst in a special regenerator, followed by continuous addition of this regenerated catalyst to the reactor.
- Other includes nonregenerative reforming (catalyst is replaced by fresh catalyst) and moving-bed catalyst systems.

REFINERY SHUTDOWNS

SOUTH AMERICA
1. Mobil Oil Barbados Ltd. - Bridgetown, Barbados. 4,000 b/cd capacity, January 1998.

U.S.
1. Shell Odessa Refining Co. - Odessa, Tex. 28,300 b/cd capacity, November 1998.

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WORLDWIDE REFINING Company and refinery location	Charge capacity, b/cd									Production capacity, b/cd									
	Crude	Vacuum distillation	Coking	Thermal operations	Catalytic cracking	Catalytic reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Alkylation	Pol./Dim.	Aromatics	Isomerization	Lubes	Oxygenates	Hydrogen (MMcfd)	Coke (mt/d)	Sulfur (mt/d)	Asphalt
Total	1,187,842	430,560	36,660	121,300	104,400	171,748	106,953	86,000	[4]28,959 559,565	12,650	....	25,618	13,700	11,600	3,900	144.9	....	841	14,620
NETHERLANDS ANTILLES																			
Refineria Isla Curazao SA—Emmastad, Curaçao	250,000	157,000	....	[1]70,000	[1]50,000	[1]19,800	....	....	[2]49,600 [2]29,100 [5]13,500 [7]2,700	[6]6,300	[1]2,900	....	....	8,800	....	....	300	140	15,000
Total	250,000	157,000	....	70,000	50,000	19,800	....	....	94,900	6,300	2,900	....	....	8,800	....	....	300	140	15,000
NEW ZEALAND																			
New Zealand Refining Co. Ltd.—Whangarei	98,000	42,750	....	....	....	[1]22,500	[1]25,000	....	[2]32,400 [4]18,000	....	....	....	....	....	....	[1]44.0	....	80	4,410
Total	98,000	42,750	....	....	....	22,500	25,000	....	50,400	....	....	....	....	....	....	44.0	....	80	4,410
NICARAGUA																			
Esso Standard Oil SA Ltd.—Managua	18,500	1,900	....	....	....	[1]3,200	....	....	[5]5,700 [4]6,600 [4]4,000	....	....	....	....	....	....	....	....	....	....
Total	18,500	1,900	....	....	....	3,200	....	....	16,300	....	....	....	....	....	....	....	....	....	....
NIGERIA																			
Kaduna Refinery & Petrochemical Co. (NNPC)—Kaduna	110,000	36,290	....	....	[1]18,000	[1]15,300	....	....	[1]21,600 [4]15,750 [8]536	....	....	[2]291	....	3,878	....	....	....	....	14,850
Port Harcourt Refining Co. (NNPC)—Port Harcourt, Alesa Eleme	60,000	....	....	....	....	[1]6,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Port Harcourt, Rivers State	150,000	54,000	....	....	[1]40,000	[4]33,000	....	....	[1]33,000 [6]14,500	[7]7,020	[2]2,274	....	[1]3,610	....	....	....	....	....	....
Warri Refinery & Petrochemical Co. (NNPC)—Warri	118,750	34,200	....	....	[1]24,700	[1]15,770	....	....	[2]15,770 [6]8,075	[2]2,850	....	....	....	....	....	....	....	....	....
Total	438,750	124,490	....	....	82,700	70,070	....	....	109,231	9,870	2,274	291	3,610	3,878	....	....	....	....	14,850
NORTH KOREA																			
Government[J]	29,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ungi	42,000	....	....	....	....	[1]7,300	....	....	[1]7,400	....	....	[1]1,000	....	....	[1]1,000	....	....	....	....
Total	71,000	....	....	....	....	7,300	....	....	7,400	....	....	1,000	....	....	1,000	....	....	....	....
NORWAY																			
Esso Norge AS—Slagen	105,000	....	....	[2]30,200	....	[1]12,100	....	....	[2]22,600 [3]9,200 [6]9,500	....	....	....	....	....	....	....	....	24	....
Norske Shell AS—Sola	53,000	....	....	[1]18,000	....	[1]11,000	....	....	[1]17,500 [1]11,000	....	....	....	[3]4,000	....	....	....	....	....	....
Statoil Mongstad—Mongstad	154,000	....	[2]25,000	....	[V]54,000	[1]9,800 [3]15,800	....	[2]17,100 [4]16,900	[1]26,000 [6]10,000	....	[1]11,500	....	[3]4,000	....	....	....	610	....	....
Total	312,000	....	25,000	48,200	54,000	48,700	....	34,000	135,800	....	11,500	....	8,000	....	....	....	610	24	....
OMAN																			
Oman Refinery Co.—Mina Al Fahal	85,000	....	....	....	....	[3]16,000	....	....	[2]21,000	....	....	....	....	....	....	....	....	....	....
Total	85,000	....	....	....	....	16,000	....	....	21,000	....	....	....	....	....	....	....	....	....	....
PAKISTAN																			
Attock Refinery Ltd.—Rawalpindi	30,500	1,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
National Refinery Ltd.—Korangi, Karachi	62,050	12,600	....	....	....	[3]3,800	....	....	[2]3,800	....	....	....	....	3,400	....	....	....	....	3,600

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World Energy Council Data on Nigerian Electricity Sector
November 1999

Electricity Supply for Nigeria

3.1 Electricity Supply by Source

	1980	1990	1992	1993	1994	1995	1996
Coal	0.03	0.0	0.0	-	-	-	-
Oil	3.2	4.6	5.5	4.1	4.5	3.5	3.9
Natural Gas	1.1	3.6	3.3	4.9	5.5	5.5	5.6
Nuclear	-	-	-	-	-	-	-
Hydro	2.8	4.4	6.1	5.6	5.6	5.5	5.5
Other	-	-	-	-	-	-	-
Net Imports	-0.1	-	-0.1	-0.1	-0.1	-	-
Total Electricity Supply TWh	7.0	12.6	14.7	14.4	15.4	14.5	15.0

3.2 Electricity Consumption by Sector

	Commercial	Residential	Industry	Transport	Other
1980	17.0	43.90	34.59	..	4.53
1990	23.82	50.49	25.69	..	0

3.3 Power Plant Capacity and Efficiency

	1980	1990	1992	1993	1994	1995	1996	2000	2010	2020
Hydro										
Maximum Output Capacity (MWe)	560	1129	1427	1432	1408	1674	1758	1758	1758	2518
Average Efficiency (%)	..	..	..	..	..	..	..	..	..	..
Conventional Thermal										
Maximum Output Capacity (MWe)	1088	1376	1589	1368	1151	2371	2375	2375	2575	2791
Average Efficiency (%)	..	..	..	..	..	..	..	..	..	..

* * *

United States
Energy Information Administration

August 1999

ELECTRICITY AND COAL

Nigeria currently has 5,881 megawatts (MW) of installed electric generating capacity. Nigeria plans to expand its electric generation, transmission, and distribution systems. Approximately 43% of Nigeria's population currently has access to electricity, but the National Electric Power Authority (NEPA) plans to boost this share to 85% by 2010. NEPA's plan would call for an additional 15,000 kilometers (9,000 miles) of transmission lines, 16 new power plants, and new distribution and marketing facilities. The Nigerian government is hoping to increase foreign participation in the electric power sector, and it is considering offering Build, Own, and Operate (BOO) projects. Negotiations are currently underway between Mobil and the NEPA over construction of a 350-MW gas-fired power plant in Rivers State in southern Nigeria. The government is also considering the privatization of existing facilities.

From March 1999 EIA Summary: General Abubakar approved the rehabilitation of eight power plants. Power minister Bello Suleiman stated that the eight plants were currently generating a combined 2,800 MW, but that their combined capacity was 5,900 MW. The Nigerian government is hoping to increase foreign participation in the electric power sector, and it is considering offering Build, Own, Operate (BOO) projects. Negotiations are currently underway between Mobil and the NEPA over construction of a 350 MW gas-fired power plant in Rivers State in southern Nigeria. Privatization of all or portions of NEPA are also being considered. General Abubakar stated that the government was considering a 40% sell-off of the state-controlled electricity and telecommunication enterprises with foreign management control assuming operations.

The Nigerian Coal Corporation (NCC) plans to expand operations at its Owukpa mines. The mines, located in eastern Nigeria, had annual production of nearly 0.55 million short tons (mmst) in the 1950's. Nigerian coal production had declined to 0.11 mmst by 1995. The three mines at Owukpa currently have an annual production capacity of 0.33 mmst. The NCC is planning to develop the coal mining sector by offering concessions to local and foreign investors. Investors will be required to finance mine development and pay the equivalent of 10%-15% of mine output to the NCC in cash or coal.

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Nigeria. Power breakdown
(AP, 11 March 1999)

A **total breakdown in Lagos' long- unreliable power supply** forced many businesses in Nigeria's commercial capital to close. The electricity supply collapsed late on 10 March, when the only functioning gas-powered turbine at the city's Egbin power plant broke down. The other five have been shut down for maintenance. Radio and television stations continued to run using their own generators. After 15 years of military rule, Nigeria, the world's sixth-largest producer of crude oil, is in dire economic straits, and its infrastructure is crumbling. Power outrages are a regular event. The Nigeria Electric Power Authority, or NEPA, is popularly known as "Never Enough Power Anywhere". The company has resorted to power rationing in most of the country in the last month.

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Excerpt from Nigeria Travel Diary
(Posted on the internet by an American business man)

The corruption has become so pervasive that the whole economy has become organized around it. It trickles down like an acid, seeping through the bureaucracy, eating its way into the state and local governments, where the governors and local government council chiefs nearly always take bribes from contractors who get awarded contracts on the basis of how generous they are with their "dashes" or local people needing favors. Every bureaucrat with any power, his secretary and even his driver have their hands out. The desirability of jobs in the government have nothing to do with salaries or prestige; all that matters is the opportunities for dash.

The most desirable jobs are with Customs and Immigration, where large bribes can be routinely extracted from foreigners, or as managers in service businesses, such as the **Nigeria Electric Power Authority** or the Nigeria Telecommunications Company, where someone wanting electrical service or telephone service will have to pay big bribes, often in the thousands of dollars, to get reasonably prompt service. Even the technicians are on the take, expecting a bribe before they will do the actual install, or to overlook an illegal attachment to a power line or telephone extension.

The choking effect on the economy is overwhelming. The company I was working for sold its television facilities for three times what the equipment and labour to install it cost, yet it still had a hard time making a consistent profit. There is no way that anything but the most wildly profitable business plans can survive in such a business climate. The few large enterprises that do succeed there often involve the oil industry or are engaged in illegal or unethical enterprises, such as the arms trade or the drug trade or smuggling.

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Excerpt from Memorandum of Economic Policies of the Government of Nigeria
February 22, 1999

Domestic Deregulation and Privatization

23. While economic activity may be constrained by tight monetary policy, the impetus for economic growth will come from freeing the energy of the private sector through deregulation and privatization. As regards the former, we recently enacted 11 laws that amended or repealed legislation that inhibited competition or conferred monopolies on public enterprises in the petroleum, telecommunications, power, and minerals sectors. We have also licensed a few private telecommunications companies and are discussing with a major oil company the possible development of an independent power-generating plant. To further consolidate this policy, we will review other legislation that constrains competition and amend it as needed, by March 1999, to eliminate the remaining constraints. We will also enact the legislation necessary to enable the establishment of an independent regulatory institution for the power sector and the further strengthening of the institutional capacity of the regulatory arms of the Department of Petroleum Resources and the National Communications Commission (NCC) by May 1999.

24. In addition, with respect to petroleum products, the government

- liberalized the importation of petroleum products (effective December 21, 1998);
- deregulated the domestic market (also effective December 21, 1998), allowing distributors and marketers to freely set prices in line with their costs and market forces, subject to maxima negotiated trilaterally during a transition period; and
- will strengthen the regulatory framework for the petroleum market to ensure fair competition, and to enforce quality control and safety and environmental standards by end-May 1999.

The above measures, together with the rehabilitation of the refineries, should improve the supply of petroleum products and soon eliminate the shortages that have impeded economic activity.

25. Furthermore, with the aim of making competitive enterprise the moving force in the national economy, the government has assigned privatization and related institutional reforms a high priority. Our programme encompasses the privatization or commercialization of all public enterprises engaged in activities of a commercial nature; once this programme has been completed in three- to four-years' time, no activity of a strictly commercial nature should be carried out by the federal government. Our strategic objective over the next few months is to make the privatization process difficult to reverse, while observing the sound practices and full transparency needed to ensure sustained public support. To help guide the privatization process and establish the necessary legal and regulatory structures, advice will be sought from the World Bank. Furthermore, the government will seek specific assistance from the International Finance Corporation (IFC) on the sale of selected enterprises.

26. Our privatization programme was launched in October 1998 by inviting from potential strategic investors expressions of interest in the acquisition through joint-venture arrangements of a 40 percent share in 19 major public enterprises slated for partial privatization. The intent was to sell at least a 40 percent share to strategic investors initially and then 20 percent to local investors, with the remainder to be retained by the government. At the same time, we sought applicants to serve as our financial and technical advisors in this process, and several international merchant bankers have already been selected. The government will shortly be signing contracts with those advisors selected for enterprises slated for early action, and it is expected that they will begin their due diligence work in Nigeria by mid-February.

27. The companies slated for early action include the following:

- **NAFCON** (fertilizer). We will bring this key manufacturer of fertilizer to the point of sale (i.e., commencement of negotiations with the selected strategic investor) by end-May 1999.
- **Nigerian Airways**. With IFC as advisor, we expect to bring Nigerian Airways to the point of sale by end-May 1999.
- **Refineries**. The rehabilitation of the Kaduna refinery is now near completion. We expect that it can be brought to the point of sale by end-May 1999. The partial privatization of the other three refineries will follow during the second half of 1999.

- **NITEL** (telecommunications). We will ensure that the selected advisor completes due diligence, taking into account alternative sector structures, by end-May 1999, with a view to bringing NITEL to the point of sale by end-September 1999. Necessary revisions of the legal framework and NCC's mandate will be enacted by end-May 1999.
- **NEPA** (power). We will ensure that the selected technical advisor initiates by the end of March 1999 a study on the restructuring of NEPA into various component entities (generation, transmission, distribution, and/or regional); a decision on its breakup and initiation of the privatization of the various entities will follow by September 1999. The supporting regulatory mechanism will, as stated above, have been enacted by end-May.
- **Other firms**. We will sell off the remaining government and parastatal shares in five banks and in most of the cement and oil marketing companies already listed on the Lagos stock exchange by end-May 1999.

28. The government will, in consultation with the World Bank, establish by February 12, 1999 an institutional arrangement that should enable it to achieve the privatization objectives described above. In addition, we anticipate that by the end of 1999 several of the remaining enterprises in the programme will have been brought to the point of sale, and that the others will have moved to the valuation, bidding, or negotiation stages. It is also expected that the government's remaining shareholdings in the major enterprises discussed above (NAFCON, NITEL, NEPA, the refineries, etc.) will be partly or fully divested in the future.

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Comments on Rehabilitation Requirements
Excerpt from African Development Bank Briefing Paper, 1998

The country has made major investments in energy infrastructure for both export and domestic markets. The conversion facilities (refineries, pipelines, power generation, and transmission facilities) installed to supply the domestic market have ample, and in many cases excessive, nominal capacity relative to existing or prospective demands. However, much of this capacity is non-operational or operates at suboptimal rates. Other factors inhibiting the operational effectiveness of the sector include deficient distribution network, inappropriate product pricing, and large-scale smuggling. Consequently, over the years, there have been sporadic shortages of refined petroleum products in the country particularly petrol, cooking gas and kerosene. Due to low tariffs and lack of maintenance the country's electricity supply remains unreliable such that more than 90% of commercial establishments have to rely on expensive backup diesel generators that add as much as 25% to total costs of industrial enterprises.

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Thursday, 22 October 1999

NEPA lists grey areas on Lagos power project

By Yakubu Lawal

THE role of the **National Electric Power Authority (NEPA)** and agreeable tariff structure have emerged as outstanding areas to be resolved before the take off of the $800 million (N75.90 billion) Lagos State independent power project.

The authority's Managing Director, Mr. Bello Suleiman, hinted of the grey areas during a courtesy visit to his office in Abuja by the Lagos State Governor, Senator Bola Tinubu.

But he expressed NEPA's intention to co-operate and encourage the state on the venture which involves an American company, **Enron Power Nigeria Limited.**

A statement issued by the authority's Assistant Public Relations Manager, Mallam Mohammed Mousa-Booth, quoted the managing director as lauding the Lagos initiative which involves, ultimately the construction of a 560 mega watts (MW) power station at Morogbo village.

Suleiman believes the project will take off "once the role of NEPA is defined in the agreement, then details on the tariff-structure will also have to be discussed in order to be fair to all parties concerned".

Besides he implored Lagos State government and its parties to follow the right channels so as to create a level playing field for all participants. He urged the governor to see the problems and issues raised in good faith." The managing director also explained that a lot remained to be done in the area of public enlightenment while details of the position of NEPA in the agreement have to be examined thoroughly.

He, however, commended the pioneering effort of the Lagos State government to invest in the generation and distribution of electricity to its citizenry. Suleiman also noted that the coming of Enron Nigeria Limited to generate, in the interim, 90 megawatts (MW) of electricity to add to the present 2,300mw being generated by NEPA, would help a great deal in stabilising the system on both the short and long term period.

"Constraints should be understood only as difficulties that must be solved for the programme to succeed," he stated.

Senator Tinubu had sought the cooperation of NEPA towards the success of the state's electricity project.

The governor noted that as the country enters the next millennium, and with the government policy on privatisation and deregulation, more private investors would be attracted and this will cause an increase in the demand for electricity.

In a similar vein, the Jigawa State Governor, Alhaji Ibrahim Saminu Turaki, had solicited NEPA's cooperation and assistance in the rural electrification programme in the state; pledging to provide a counterpart funding, if necessary.

Mr. Suleiman also promised to assist Jigawa State within the limited resources of the authority.

He said that the on going 132KV line from Kano-Dutse-Azare project would be pursued with vigour so as to link the state to the National Grid system. Meanwhile, Mr. Suleiman said NEPA has not spilled any water at its Shiroro Hydro-Power Station Dam in Niger State.

The managing director who stated this while receiving the Kwara State Governor, Rear Admiral Mohammed Lawal (rtd), attributed the flood in the area to the heavy rains.

He said the Shiroro dam was yet to exceed its conservation capacity of 6 billion cubic metres of water, and could not therefore be reported to have wreaked any havoc on villages within the vicinity.

The managing director stated that the spillage carried out at Kainji was one to save the dam from collapsing and causing extensive havoc to life and property, and to save huge investment which government has made in the place. According to him, spillways are an integral part of the general engineering specification for the construction of dams, as country devices.
Governor Lawal had presented a list of problems facing the state which, he said, are geared towards the improvement of power supply in the state.

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ABUJA MIRROR: OCTOBER 13-19, 1999

NEPA BLAMED FOR FLOODS
Floods have submerged communities in Niger state and residents are blaming the National Electric Power Authority (NEPA) of negligence.

According to the leaders of these communities , flooding has become a permanent feature in their lives especially as over 800 squares kilometres of land is submerged when the dams are opened.

The dams that lead to this flooding were put in place by government for electricity supply in the sixties but today they have become a menace to the communities in which they are situated.

Community leaders blame NEPA for not meeting their part of the agreement to resettle all the communities within 800 sq. kilometres of the dam site.

Persistent floods have been blamed for serious problems in the communities. One of the residents said "We have been totally cut off from social and political activities."

The village head of Muregu, a village affected by the flood, told the Niger state governor; Engineer Abdulakadir Kure, that the state government should come to their aid.

Governor Kure toured the area and was touched by their state. He expressed shock and was compelled to donate the sum, of N30,000 to the communities as assistance to meet their pressing need and to create a harmonious relationship between them and government.

Engineer Kure promised that the state government will reach NEPA to reconcile the terms of agreement.

Critics say that the resettlement may be long in coming because before NEPA opened the dams a letter was sent to each of the affected communities for them to leave the area.

While the communities complain they were not resettled, observers say their refusal to heed NEPA's warning, is what has led to their problems.

Experts say that environmental authorities may have to step into the issue because of the unwillingness of parties concerned to yield to reason.

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ABUJA MIRROR: SEPTEMBER 15-21, 1999

Power supply still erratic
By Abdulmumini Balogun

Erratic power supply in the FCT is a dangerous development, which if not checked will result in great losses to the nation.

Apart from the main capital - Wuse, Garki, Maitama, Wuse II, Asokoro and Garki II - all the suburbs of Abuja are bedevilled with what seems a permanent difficulty in supply of electricity.

As NEPA complains of lack of transformers to work with, one wonders why the FCT authorities established settlements like Nyanya, Karu, Karimo, Gwagwa, Kubwa, and many other places. If they were unsure of providing infrastructure and basic amenities to those places, why authorise people to occupy them as settlement camps for construction companies and alternative abodes? Living in any of these places is a continuous trial of human survival instincts.

Karimo has no tap water, Gwagwa has bad roads and is clumsy. Kubwa has erratic power supply and poorly constructed access roads. In fact in these places electricity is rationed. Sometimes some residents get electricity only at night when they are asleep and do not need it.

The real danger is in the area of insecurity. A well-lit place is not a welcome fishing ground for thieves and crooks. A well-lit place does not encourage the death of patients in the hands of hospital authorities. Imagine a situation where an accident victim is rushed into a hospital in Karimo but cannot be saved or stabilised due to lack of electricity.

Water, electricity, food, shelter, and clothing are basic necessities. None should supersede the other. If F.C.T authorities are trying hard already, they need to try harder than before so that those in the suburbs will not feel rejected.

Something has to be done by NEPA and the minister of the FCT. Now!

* * *

Business and Economy

Date of Article: **10/22/99**
Topic: **Marubeni, Enel Show Interest in Nigeria's Power Sector**
Author: **Chidi Aja, Senior Energy Correspondent**

AGAINST the background of speculations on the identity of power companies said to have indicated interest in the power sector of the economy, investigations by The Post Express show that two companies, Marubeni Corporation of Japan and Enel Power of Italy are in strong contention.

It would be recalled that the Minister of Power and Steel, Chief Bola Ige, on assumption of office unfolded his agenda of eliminating amendments of power failure within 24 months, saying that the electricity industry in the next millennium will be completely deregulated and internationally acceptable. He said that the enabling environment would be created to encourage local and foreign investors to participate in the generation, transmission and distribution of electricity power any combination of these as Independent Power Producers (IPP).

Consequently, he said, the ministry has received inquires from 15 independent power producers from all over the world.

However, officials of the two companies currently taking part in the first electricity power exhibition at the Tafawa Balewa square could not confirm the story, but a Marubeni spokesman told The Post Express, that "we are still studying the pronouncement by the minister. As soon as there is something concrete on the ground, I can assure you that we will unfold our plans for the electricity industry."

He further explained that the exhibition is a first step towards that direction as it offers the company the opportunity of showcasing its capabilities and knowledge of the industry, saying that Marubeni has played a key role in the country's power sector having constructed the Egbin Thermal Power Station which is reputed to be the largest power station in the West African sub region with six natural gas fured turbine generators each of 220MW and total installed capacity of 1320 MW.

On his part, an Enel official who pleaded for anonymity also would not confirm the story but said "we have an experience in power generation and transmission which given the opportunity we would like to share with Nigerians."

But he said that they have brought in a number of equipment, logistics and manpower towards making sure that the company maintain a strong presence in the country.

* * *

Business and Economy

Date of Article: **10/20/99**
Topic: **Japanese Group Pinpoints Lack of Insurance as Bane of Nigeria's Privatisation**
Author: **Andrew Agbese, Abuja**

As the country steps up efforts to woo foreign investors into Nigeria, the Japanese External Trade Organisation in the country has observed that the lack of a clearly Insurance scheme for private businesses may mar such initiative.

Speaking while exchanging views with the Chief Economic Adviser to the president, Chief Philip Asiodu, members of the Japanese delegation led by Mr. Atsulito Nade, noted that the amount is bound to scare away foreign investors from coming into the country as no security is provided for the huge capital risks of the investors.

"We would therefore want to know if the government of Nigeria is doing anything to ensure the security of the many private businesses coming into the country", he said.

The Japanese delegation which observed that the security of businesses must be insured to generate the level of confidence needed to encourage foreign investors, also mentioned the fact that such negligence has cost the Japanese government in the past.

"We all remember what happened in 1992, I am sure if such arrangements are in place no party would have defaulted in the contract," he stated.
Responding, the chief economic adviser mentioned that the government was doing all it could to ensure the safety of foreign investors.

Asiodu who also encouraged the Japanese team informed the delegation that the Federal Government priority in investments lies in the area of telecommunication, transport and industries, adding that the privatisation of some of the parastatals in those sectors are also paramount.

He added that the government is also keen on exploiting the oil and gas sectors but that it was first recruiting a team of consultants to cost each of the utilities before privatising them.

Chief Asiodu however noted that there are some problems millitating against economic development in the country saying the Nigerian government has already sent an advance team to work on some of the problems paramount among which he said is the huge debt the country is owing.

He added that if Nigeria's debt are not concealed the country would be spending about 3-4 billion dollar a year on servicing the debts alone. "Such problems do not encourage development ", he said.

* * *

Business and Economy

Date of Article: 10/25/99
Topic: Nigeria to Export Coal Again
Author: Adagogo Brown,Port Harcourt

NIGERIA is to resume the export of coal through the Port Harcourt ports soon.

Already, a new coal handling system is being installed at the ports by the Nigeria Coal Corporation in readiness for the commencement of coal shipment abroad.

The Minister of State for Solid Minerals, Dr. Becky Ketebu-Igwe, announced this last week during a courtesy call on the Rivers State Governor, Dr. Peter Odili at Government House, Port Harcourt.
She said the government has so far spent N100 million on the facility which is located at "berth 8" at the Port Harcourt Harbour.

The minister told Governor Odili that she was in the state to assess work so far done on the project and determine its readiness to handle coal-loading for customers who are expected to come from various parts of the world.

The minister of state recalled that in the early years, coal was a leading fuel for industries in Nigeria, generating power and at the same time earning foreign exchange for the country.
"When Nigeria became a crude oil producer, the balance tilted and the coal industry went to sleep," she declared.

Dr. Ketebu-Igwe emphasised that with the current effort to diversify the economic base of the nation, the Nigerian Coal Corporation would be relevant again as it is being developed for both domestic and international markets.

Under the arrangement, the minister of state added, coal from the Okaba mines in Kogi State would be committed to the domestic market while coal from Okpara mines in Enugu State would be for international market.

She solicited the assistance and co-operation of the Rivers State government to ensure successfully export of coal through the Port Harcourt Ports Complex.
In his response, the state Governor. Dr. Peter Odili assured the minister of the state government's support.

I assure you that our ports, our shores and our people are ready to witness the first shipment of coal through Port Harcourt to the International Market," Dr. Odili said.

Governor Odili reminded the minister that she was not only a minister of the Federal Government, but also an ambassador of the South-South Zone and of Rivers and Bayelsa states in particular.

He expressed the hope that with the calibre of persons serving as ministers from the zone, the area would witness "effective representation and a fair share of federal amenities."

He pointed out that under the able leadership of President Obasanjo, the people of the state and South-South are going to see a new phase of development.

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Excerpts from World Bank Draft Report
November 1999

A Brighter Future?
Energy in Africa's Development

FOREWORD

Today's energy picture in Africa would probably surprise most people. For more than 90% of the 650 million people in Africa, energy is about wood, waste, dung, candles and kerosene. Energy in Africa is mostly still about human energy: farming by hand or animal, walking as the primary means of getting anywhere. Most importantly, it is about opportunities to escape poverty which are denied by the impossibility for Africans to invest in their own development. Without access to the services which commercial energy provides Africans are unable to leverage their efforts to generate surplus, unable to participate in markets and unable to grow beyond subsistence activity. Unfortunately, the energy picture in Africa is also marked strongly by environmental degradation from poor management of traditional fuels.

The peoples of Africa have urgent needs for better access to the services which commercial energy provides and for better management of traditional fuels. Energy services leverage human effort and open the possibility for growth beyond subsistence existence. The leverage is enhanced through providing time to participate in personal development, for example in education and health programs. Sadly, across Africa access to modern energy is at best stagnant, while traditional fuels become increasingly sparse and more labor intensive. In some countries access to modern energy is actually declining from its current very low level, as existing systems flounder for lack of maintenance and extensions of service fail to keep pace with population growth. An ever greater number of Africans are shut out of the development process as a result.

No country in the world has succeeded in shaking loose from a subsistence economy without access to the services which modern energy provides. The history of development identifies it as one of the prerequisites to facilitate social development and fuel growth. There is no evidence to the contrary. There is, however, voluminous evidence of how lack of access constrains social development and growth. A mark of the importance which people in developing countries attach to energy is that they spend 12% of their income on energy, compared with an average of just 2% in OECD countries. As a 'revealed preference', to use the economic jargon, energy is high on the agenda of those struggling to escape poverty.

For developing countries as a whole, private funding now provides about 20% of energy sector investment needs. This is good news and must be encouraged. But most of this investment is focused on just 12 countries, none of them in Africa. For Africa, the possibility of private investment in energy is beginning to emerge and will be encouraged vigorously by the Bank Group. But we must also be realistic, and recognize that foreign investors will have limited appetite for African risk in the foreseeable future, particularly in the difficult few years that may lie ahead. The capabilities of local investors and capital markets likewise are extremely modest compared with the needs of the sector. By themselves pioneering investors will not quickly reverse lamentably slow progress on improving access for the hundreds of millions of Africans who want the opportunity to grow out of their plight. This present highly unsatisfactory situation exerts a sizeable deadweight constraint in all other efforts to fight against poverty. This is not a time for complacency among the international development community, on seeing the first sparks of private sector interest. For the time being, it is a sad fact that each sunset on Africa's energy sector leaves more and more Africans in the dark and shut out from the development process.

INTRODUCTION

This document has been written to achieve three objectives. The first is to refresh our awareness of the relevance of energy infrastructure and services to the major challenges of development, particularly human resource development; the fight against poverty; and care for the natural environment. The second objective is to show how the Bank's work on energy forms an integral part of a balanced, coherent country assistance strategy for each country. The third objective is to show how the Africa Energy Team, together with our partners, will plan innovatively and draw upon the wide range of Bank tools and resources to formulate and deliver workmanlike contributions to country assistance strategies that can make a difference for our clients on the ground.

I. ENERGY LINKAGES TO COUNTRY ASSISTANCE STRATEGIES

Six important linkages interconnect the energy sector with the drivers of economic and social development. All too often these linkages have become constraints. Simply stated, the objective of the Team's strategy is to help ease these constraints, so that the energy sector facilitates, rather than constrains, development.

Linkage #1: Macroeconomic Stability is Incompatible with a Poorly Functioning, Vulnerable Energy Sector

Energy places considerable pressure on the stability of many African economies. Reasonable macroeconomic stability -- a prerequisite for sustainable growth -- is simply not compatible with a non-viable, vulnerable energy sector. There are no examples of where macro-economic stability has been sustained under these conditions. Countries deficient in indigenous supplies suffer serious problems financing high energy import bills, thus shutting off opportunities for productive public investment. These countries are also left exposed to macroeconomic shocks from energy price increases and supply disruptions. Unfortunately, countries with plentiful indigenous supplies have handled their advantages poorly. Export earnings have been directed mostly towards consumption (utility and refinery subsidies in particular) to shield the poor competitiveness of domestic industry.

A second serious problem is that with nearly all of Africa's energy infrastructure under public management, macroeconomic stability and growth remain threatened by a continuing requirement for high subsidies to keep energy utilities afloat. Across developing countries as a whole energy subsidies amount to an estimated US$100 billion annually, equivalent to two-thirds of sector investment requirements. Usually, the financial performance of power utilities is dismal, requiring heavy direct or indirect subsidy. State oil and gas enterprises are often no better, yet maintain high prices in protected monopolies, stifling growth. Some subsidies may be justified to promote economic activity in rural areas but wholesale subsidies cannot be justified. Invariably subsidies have been poorly targeted and usually benefit only a small segment of an economy, including better-off households. There is little evidence of energy subsidies having produced strong supply responses. The fiscal receipts of countries in the region are too weak to support the escalating burden of energy subsidies, to say nothing of more productive uses for these resources.

Linkage #2: Energy to Fight Poverty and Improve Equity in Growth

It is increasingly apparent that Africa's poor are denied possibilities to invest in their own development and denied opportunities to grow economically through their lack of access to infrastructure, including the services which modern energy provides. Across Africa as a whole it is a sad fact that access to modern energy is stagnant at best, while in some countries access is declining as utilities flounder and service extensions fail to keep pace even with population growth. This stagnation shuts off the possibility for tens of millions of Africans to participate in the development process.

The lack of progress on improving access to energy services is counter to the Bank's goals to fight poverty and promote greater "inclusivity" in growth. Energy, it must be remembered, is not consumed for its own sake. It is demanded solely to provide services (lighting, motive power etc.) which make personal effort more productive and liberate time from subsistence chores. These energy services enable Africans to advance their personal social and economic development goals, for example through participating in education and health programs. Without this access, Africans are severely hampered in efforts to grow beyond a subsistence existence and escape poverty. Women benefit especially from the services which modern energy provides. They spend less time gathering wood, pumping and carrying water and have more time to participate in social programs and be economically productive.

Linkage #3: A Vehicle to Mobilize Private Investment and Assist Private Sector Development

Private investment is key to accelerate resource mobilization for sector development and to decrease the budgetary burden of public energy enterprises. The highly capital-intensive energy sector -- with high import content and strong demands on foreign exchange -- can have a strongly negative impact on public investment in human resource development and other infrastructure less easily provided on a commercial basis. Private investment in energy infrastructure can help ease this constraint. A second important benefit is that private investment sharpens cost-consciousness and enforces payment discipline, thus helping move the energy sector towards financial viability. This in turn further enhances the potential for private participation through improving sector creditworthiness. Modern sector regulation is an essential complement to ensure these efficiency benefits from private participation are realized, and that environmental considerations are factored into project design.

Benefits from private investment can be enhanced through assisting countries to solicit investment proposals competitively and through strengthening their capabilities to appraise and negotiate proposals. (At present most private projects are sponsor-driven proposals.)

It is through mobilizing resources to extend the distribution of energy that private investment can be especially effective (either through direct investment, or indirectly, through easing pressure on utilities' investment budgets). Direct private participation can achieve significant efficiency improvements in addition to mobilizing resources, both through tighter financial discipline at 'the money end' of the business (as noted above) and through introducing new distribution and metering technologies. Private participation in energy distribution offers the best prospect of improving access to service for Africa's poor. It is both a great opportunity to stimulate social development and growth and an enormous challenge.

Linkage #4: Development of Markets and Regional Integration

A regional perspective to energy markets and sector development offers significant benefits. Interconnection of national petroleum and power markets will help encourage private investment through expanding market size, thereby helping investors to manage commercial and political risks. Interconnection also encourages global-scale projects, which lower supply costs through avoiding investment in redundant supply facilities and decrease strategic and macroeconomic risks by expanding countries' supply options. Additionally, interconnection opens export opportunities for countries with comparative advantage in energy supply, spurring growth in those countries. The energy sector is near unique in its potential to forge closer economic ties among countries in the region.

Energy also has an important role in the development of markets at a local level. Through providing motive power to leverage human effort, energy is a significant part of the infrastructure equation that assists both rural and urban poor to grow beyond subsistence activity, generate some surplus and participate in markets.

In addition to these factors of economic integration, energy has an important role to play in easing political tensions within the region, or at least in helping confine disagreements to the negotiating table when they do arise. Energy supply, understandably, is regarded as a strategic matter of great importance by governments up and down the continent. Integrating supply fosters economic cooperation, increasing the cost of conflict to both parties, and therefore lessens the likelihood of open aggression.

Linkage #5: Energy and the Environment

Energy is not the most important threat to Africa's natural environment, at least not yet. That unwelcome honor for the time being goes to agriculture. Nevertheless, the impact of energy on Africa's environment is notable - and is becoming more serious.

Attention most usually is attracted to large energy supply projects. The impact of these projects can be significant; environmental aspects of project selection, design and implementation have to be carefully handled. But the most widespread environmental issues, and the most difficult to address, are those related to the exploitation and use of traditional fuels. There are two problems. First is the lasting environmental degradation caused by unsustainable harvesting practices and the health effects of traditional cooking practices (particularly impacting women). Second is that in many countries, production of traditional fuels is not keeping pace with rising demand on a sustainable basis. Quantities of traditional fuels available to the poorest communities can be expected to decline, worsening their plight and accelerating the pace of environmental degradation. Achieving sustainable exploitation of traditional fuels and improved end-use efficiencies is a priority from environmental, economic, and social perspectives.

Restructuring, privatization and price reform -- so badly needed across much of the sector -- also present both environmental opportunities and challenges. Increasing energy prices increase incentives for end-use efficiency, improve conversion efficiencies and help check emissions. Conversely, competition may lead to pressure to cut corners on environmental impact mitigation. Environmental regulation and monitoring need to keep abreast of changes in sector structure to ensure that the positive environmental aspects of reform are properly factored into the reform agenda while possible negative consequences are designed out by the reform architecture.

There are further opportunities and challenges. Improving economics of renewable energy sources offer new possibilities for remote power supply to rural communities more quickly than through utility extensions of supply, and in an environmentally more benign manner. Especially attractive are possibilities to mobilize communities and the local private sector in these efforts. Generally these groups will be better guardians of local habitats than a remote national utility.

Perhaps the greatest environmental challenge -- and the greatest potential 'win-win' for the region -- is to reduce the enormous amount of energy wasted through gas flaring, particularly in western Africa. It is a sad fact that each day Africa flares gas equivalent to twelve times the energy which the continent uses. The amount of energy lost each day would be sufficient to provide all Africans with access to modern energy (compared with only about 10% at present) with no increase in energy consumption. The enormity of the opportunity -- and the scale of the challenge -- is truly difficult to absorb. In western Africa, gas will be a low cost and relatively clean resource for the long term.

Harnessing this potential requires that the countries endowed with these resources show the necessary commitment to developing regional solutions to energy shortages.

The Nile and its tributaries are a further world class resource Africans can look towards to help secure their energy future. Development of the Nile's generating potential will require special care from an environmental standpoint, and because of other important uses of its waters. Like gas in western Africa, development of the Nile requires a regional perspective, in this case among the eight riparians.

Linkage #6: Good Governance

Economic and social losses from poor energy sector governance can be severe and enduring. In Africa the symptoms and effects are not hard to find:

- High direct consumption subsidies, with heavy budgetary impacts;
- Misdirection of growth (through subsidies) and losses of growth;
- Missed opportunities to mobilize private investment;
- Preservation of societal, economic and gender inequities;
- Negative impacts on the environment; and, unfortunately
- Rent seeking by public officials, including in private projects.

Unfortunately, issues of sector governance are becoming more common as the region moves more centrally onto the radar screens of private investors. The seriousness of impacts from poor governance makes the sector a natural candidate for initiatives to overhaul and update management and regulation of governments' executive role in the sector. Good models exist from around the world that are readily transferable to Africa. Good governance practices are not sector specific so multiplier and demonstration impacts can be high from initiatives in this area.

II. STRATEGY CORNERSTONES

The Team is committed to strengthening its contribution to each Country Assistance Strategy (CAS), in an effort to remove the bottleneck in the development linkages identified above. What follows is a summary assessment of where the Team can best make an impact. It is based on an objective appraisal of where the Bank is additional and of the strengths and weaknesses of the resources and instruments able to be deployed by the Team. Six strategic priorities emerge from that appraisal as the most practical and cost-effective areas where the Bank can contribute.

- **Access** -- Promote access to modern energy supplies on a commercial basis, especially in rural areas, including through aggressive promotion of renewable technologies.
- **Traditional Fuels** -- Promote more efficient and sustainable use of traditional fuels.

- **Public/Private Partnerships** -- Promote private sector solutions to management and investment constraints through privatizations, forging public/private partnerships with foreign and domestic investors and introducing modern sector regulation.
- **Utilities** -- Promote needed financial and institutional strengthening, including improved planning.
- **Markets** -- Promote liberalization of markets for petroleum products, and development of markets for power and natural gas, domestically and regionally.
- **Regional Infrastructure** -- Promote regional development of energy infrastructure to achieve economies of scale, improve energy security, increase intra-regional trade and forge closer political ties.

Access: Widening the Development Net and Putting Energy in the Hands of Communities

The importance of attracting private investment into the energy sector cannot be overstated. But its impact needs to be better understood. Most foreign private investment presently is aimed at large capital intensive projects to provide bulk supply. These projects benefit governments' budgets, the host utility, and usually provide bulk supply economically. But by itself this type of private investment does not usually improve access to energy supplies to the many millions of Africans who presently do not have access. As demonstrated above, it is improved access which opens opportunities for people to develop and grow beyond subsistence activity and out of poverty. Thus it is crucial to couple private investment in bulk supply with privatization and liberalization of energy distribution. It is also crucial to secure a reallocation of public investment resources to those aspects of energy distribution less attractive to private investors.

Public utilities have not been very effective in achieving significant improvements in access. Nor is this likely to be achieved through (mostly foreign) private investment in large projects. Improvements are more likely to be achieved through incentives to make the business of retailing energy services commercially more attractive, including to smaller local investors.

To be effective in reducing poverty, the Bank must be able to service this segment of the energy market much more effectively than in the past. This is a fundamental cornerstone of the Team's strategy and requires a new approach and new tools. Since this is the 'money end' of the energy business, the focus in this area will also help improve sector creditworthiness and hence possibilities for more private investment. The emphasis will be in four areas:

- Promoting the opening of the power sector to private supply and liberalization of petroleum distribution and improving sector regulation to ensure a level playing field;
- Developing innovative technical solutions to provide village-based or community energy systems through more aggressive deployment of new technologies, especially renewable technologies;
- Together with IFC, commercial lenders and donors, providing innovative packages of financing to support initiatives by private small investors. Subsidies, if required, will be focused on initial market establishment; and
- Ensuring that local communities are strongly involved in launching and managing access initiatives, to improve financial discipline and safeguard sustainability.

In most African countries, only the national utility is permitted by law to provide power supply. Another frequently found arrangement is that the only permitted distributor of petroleum fuels is a state enterprise. Legislation enshrining these monopolies shuts off the possibility for entrepreneurs to take up the challenge of providing supply where the public utility has been unable to do so. Removing such legislative roadblocks is a priority. So too, is removing the requirement, common in many countries, for a uniform national power tariff. Almost invariably this is set at a rate not fully reflecting supply costs and so blocks the possibility to establish small private supply systems run on a commercial basis. It is well known that consumers' willingness-to-pay can exceed public tariffs by a considerable margin. Herein lies the possibility for 'win-win' solutions: developing new local private businesses and at the same time extending access much more quickly than public utilities have managed to achieve. Sector regulation needs to keep abreast of liberalization to ensure new entrants are treated by an incumbent utility or state enterprise in a non-discriminatory manner.

Improvements in solar PV, wind and small-scale hydro technologies and associated cost reductions permit optimism that renewable can play a more prominent role in extending service commercially to larger segments of the population. Developments in small, packaged, thermal technologies will also have an important role. For the Bank, the challenge is to help develop and implement demonstration projects which show what can be achieved through

combining aggressive use of new technologies and new financing mechanisms which are able to reach down to local entrepreneurs and encourage local banks to help finance these types of project. A target which the Team has set is to support at least two large demonstration initiatives specifically targetting improved access within the next two years. Substantive involvement of local communities will be an important aspect of the initiatives. The Team considers this essential for financial viability and sustainability. Communities understand client problems better than utilities and are more flexible and creative than large public utilities. Moreover, communities can enforce standards of behavior to ensure financial discipline more effectively than utilities. They are also more effective in involving women in initiatives.

Traditional Fuels: Use Them Wisely or Lose Them

Even with some expectation of wider access to modern energy, it is certain that millions of Africans will continue their reliance on traditional fuels for decades to come. More efficient use of traditional fuels, particularly fuelwood, is critical to meet the essential needs of the most disadvantaged of Africa's poor; it is also of utmost importance to the natural environment. A lack of adequate policy, planning, and introduction of sustainable harvesting practices will, if not addressed, lead inexorably towards crisis for the poorest of the poor and to still more irreversible damage to the natural environment.

The Team has been successful in mounting demonstration programs in several countries through the Regional Program for Traditional Energy Supply (RPTES) showing how exploitation and use of traditional fuels can be moved towards a sustainable basis. An important side-benefit is considerable employment and income generation at the village level, as output increases from better management of traditional fuel resources. The success of the programs owes much to strong local participation and leadership, in analyses, preparatory activities and roll-out of new policies and projects. More countries are being attracted and interest will continue to broaden as more of the country programs reach the stage of full-scale investment projects.

Each country program will comprise diagnostic, pilot and full-scale phases with the following main objectives and activities:

- Sub-sectoral policy review and diagnostic with full client participation;
- Selected high impact capacity development and institutional strengthening;
- Identification and implementation of pilot investments (where applicable);
- Identification and development of sub-sectoral investment programs and/or projects; and
- Implementation of programs and/or projects.

Traditional fuels activities will be included as an integral part of the Team's country business plans and coordinated with other activities in the sector. Work on traditional fuels will also be coordinated with other rural development programs, especially freestanding bilateral activities, the Bank's work on forestry and other relevant agricultural programs.

Public/Private Partnerships : Long-Term Potential versus Short-Term Needs

An increasing number of African governments are recognizing the benefits of privatizing utilities and opening infrastructure sectors to private investors. Understandably, however, few have experience with planning and implementing privatizations or soliciting private investment. Investors (power developers in particular) are now starting to look at Africa seriously as an emerging market, making it urgent to assist our clients in these areas. The Bank will focus on countries which demonstrate -- through actions -- a credible intent to privatize and liberalize. The Team's objective is to have as much of the sector as possible transferred into private ownership through open, transparent procedures and in a manner which mobilizes significant investment.

The Team will assist with privatizations in three areas:

- Planning of an appropriate sector structure for the country concerned, particularly to promote competition in supply and independent, transparent and predictable sector regulation;
- Reform and financial strengthening of those parts of a sector (if any) to remain in public ownership, with a clear commercial interface with the privatized sector; and
- Financing to support implementation of privatizations, for example to establish a new regulatory function and restructure utility debt. Where required, the Bank will also be prepared to provide financing or guarantees to support the privatized utility, alongside commercial lenders.

While the pace of utility privatizations remains modest, investor interest is focused mostly on new projects, and on securing these through directly negotiated agreements. Typically, commercial security is sought through government risk indemnifications, to compensate for poor creditworthiness of utility purchasers and lack of independent regulation. Beyond the direct budgetary benefit to governments from these transactions, efficiency and financial benefits to host countries can be improved through better preparatory activities and better management of the investment process. The Team aims to assist in three ways:

- Help governments quickly to develop standard procedures for soliciting, appraising and negotiating private investment proposals in an open and transparent manner;
- Assist governments to develop and put in place modern regimes of sector regulation, to attract more private sector interest and limit the need for special investment protection agreements; and
- Together with IFC and MIGA, support the financing of private projects in cases where the Bank's participation is additional and can materially improve the prospects of a transaction proceeding.

Compared with investments in privatizations and new supply projects, to date there has been relatively little investor interest in energy distribution systems. This, as noted above, is an area of special importance: it is here that the financial viability of an energy supply business is established or lost, impacting all private investment and the financial health of public utilities. Additionally, it is private sector participation in distribution that offers the best hope of improving access. The Team's efforts in this area will aim to:

- Assist governments to package distribution privatizations in a manner most likely to attract investment interest;
- Promote public/private partnerships with local investors to launch private financings of smaller distribution systems (for example, village-based or community power systems and petroleum distribution) with subsidies limited to initial establishment; and
- Together with IFC, be prepared to provide packages of equity, debt, and guarantees through intermediaries to support these smaller projects.

Market Liberalization: Supply Competition to Improve Service and Drive Down Costs

Utility privatizations and private investment in new supply projects are necessary but not sufficient conditions to improve the financial performance of the energy sector and service quality: private monopolies can be as pervasive as public monopolies. Market liberalization is the other essential ingredient. It is the natural counterpart to privatization and private investment, without which benefits from such initiatives are likely to be limited to budgetary relief. Many investors are very good at seeking dispensations to safeguard returns to their shareholders and often prefer a negotiated commercial environment over a competitive one. Market liberalization is key to realize the considerable efficiency potential of private supply, in addition to budgetary relief.

The challenge, therefore, is to work with our clients to promote open energy markets, to remove legislative and commercial barriers to entry and promote transparent competition in supply. In most African energy markets, competition is still conspicuous by its absence. Under the guise of assuring strategic security, many countries retain monopoly arrangements for energy supply. Invariably the result is poor service and a financially weak sector (which in itself poses significant strategic risk.) Oil and gas enterprises are an example; much of Africa's industry is saddled with higher costs for petroleum products than necessary. In other cases (power distribution especially) artificially low prices throttle extensions of service and present a formidable commercial barrier to new suppliers. Liberalizing energy supply and promoting competition in supply are central to the Team's agenda. Specific targets will include liberalization of oil and gas distribution through the adoption of import parity pricing, with rational differential between fuels, and elimination of import duties, quotas and refinery subsidies. Liberalization of power supply will be pursued through privatizations and the removal of legislative and commercial barriers to public/private partnerships (including in particular through adopting modern regulation and tariff setting mechanisms.)

Public Utilities: Continued Need for Institutional and Financial Strengthening

The Team recognizes that in some countries privatization of energy utilities and the attraction of significant private investment may take some time (for example, because of fuel supply insecurity). Where there is political commitment to reform, a more immediate challenge for Bank assistance is to turn around poor performance of existing public utilities. Often these are institutionally weak, have been poorly managed and are not financially sustainable in their present form (with attendant macroeconomic risks). In these countries the strategy will focus on:

Encouraging government to step back from the day-to-day operations of utilities;
Establishing clear and consistent goals for the utility, by government and the regulatory authority;
Putting in place a good management team;

- Maintaining adequate cash flow and revenues;
- Encouraging the utility to do more on extending access, for example through offering distribution concessions;
- Providing training to fill skill gaps and develop the human resource base of a utility;
- Developing, in particular, the utility's technical and financial planning capabilities;
- Improving access to capital and foreign exchange; and
- Requiring full financial disclosure and accounting transparency.

These matters will be pursued through interventions where the physical objective often will be "keeping the lights on". By assisting countries to resolve urgent supply problems, and avoid the attendant economic and political disruption, the Team can help establish a more stable platform from which to implement the reforms outlined above. It must be stressed that this course of action will be followed only in countries where there is a solid commitment to reform; countries choosing not to reform will not be a priority for Bank assistance.

Regional Infrastructure: Encouraging Energy Trade, Private Investment and Enhancing Energy Security

In developed countries the emergence of a regional perspective to energy development has been a comparatively recent development. African countries have an opportunity to incorporate a regional dimension at an earlier stage, with the potential for considerable benefits. Most African countries have energy sectors which are small by international standards. Economies can be achieved through integration, by harmonizing technical standards, avoiding duplication of investment and through being able to operate supply facilities more intensively than feasible with a single national demand.

The need for a regional approach is all the more pressing considering the capital intensive nature of the energy sector, the usually high foreign exchange content of investments and limited availability of investment funds in the region. And as noted previously, regional integration offers to private investors a broader market base, which will help address the commercial risks of projects and make investment more likely.
Through economizing on supply costs, energy utilities also open the possibility to achieve financial sustainability at lower tariff levels than otherwise needed, thereby helping with affordability and access. In addition, reducing requirements for new projects helps to limit the environmental impact of the sector. Finally, integration of energy supply systems can play a role in helping limit the likelihood of aggression between neighboring countries: both countries will have more to loose.

Main interventions by the Bank to promote a regional approach will be in the areas of planning, the promotion of regional energy bodies, and energy transport.

There is much to be done on power planning. Standards of planning are variable across the region; some countries do not have sector development plans at all and approach the appraisal of large investments in a dangerously ad hoc manner. The Team will seek to ensure that governments and utilities have a better appreciation of investment options -- well ahead of when important decisions need to be made -- and highlighting the additional costs of energy self-sufficiency. The aim is to (1) equip client countries with the tools they need to appraise private investment proposals more satisfactorily, (2) be rigorous in the planning of public investments; (3) be better equipped for discussions with sponsors of private proposals -- and (4) demonstrate that reliability of supply and economy are improved in a regional approach.

Partnerships with regional bodies that promote integration of energy systems will be strengthened. As well as encouraging regional planning, the Team will promote the institutional development of regional bodies. In this regard, the Team aims to assist the SADC countries with further development of the Southern Africa Power Pool and will seek to support (write out agency name) (UPDEA), the association of power utilities in West Africa. Supporting energy transport will be an investment priority. Oil and gas pipelines and power transmission lines will be the main targets. As well as financing physical linkages, the Bank will focus on technical and financial mechanisms needed to promote energy trade.

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