

# COUNTRY ANALYSIS BRIEFS

## Nigeria

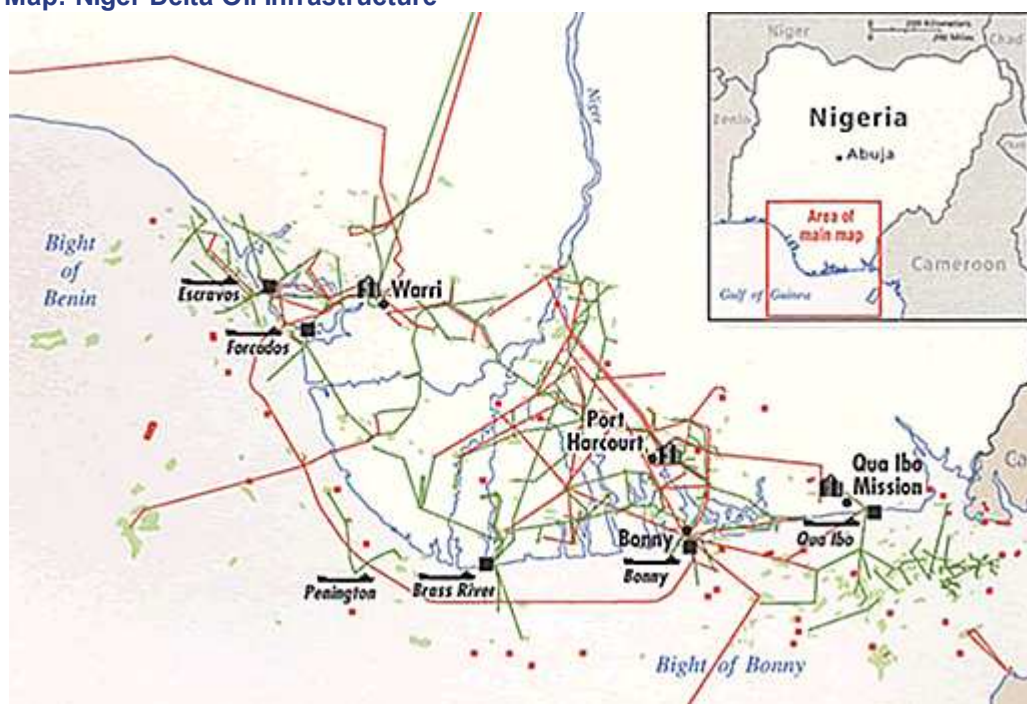
Last Updated: May 2009

### Background

***Nigeria's hydrocarbon resources are the mainstay of the country's economy but production and growth of the oil and natural gas sectors are often constrained by instability in the Niger Delta.***

The Nigerian economy is heavily dependent on the oil sector which, according to the [World Bank](#), accounts for over 95 percent of export earnings and about 85 percent of government revenues. The oil industry is primarily located in the Niger Delta where it has been a source of conflict. The industry has been blamed for pollution that has damaged air, soil and water leading to losses in arable land and decreasing fish stocks. Local groups seeking a share of the oil wealth often attack the oil infrastructure and staff, forcing companies to declare *force majeure* on oil shipments. At the same time, oil theft, commonly referred to as "bunkering" leads to pipeline damage that is often severe, causing loss of production, pollution, and forcing companies to shut-in production.

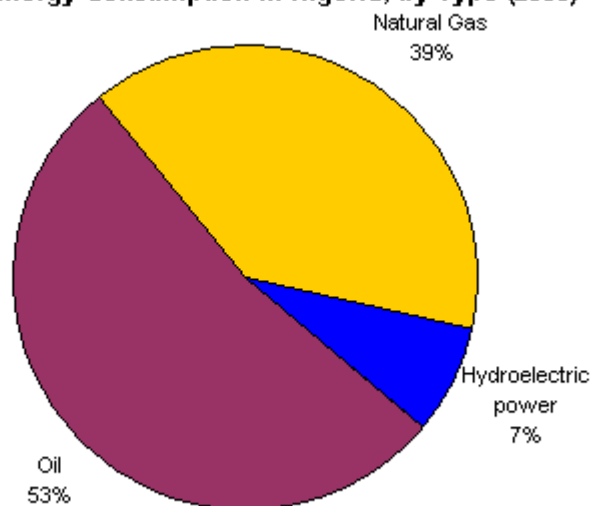
### Map: Niger Delta Oil Infrastructure



Source: CIA

In addition to oil, Nigeria holds the largest natural gas reserves in Africa but has limited infrastructure in place to develop the sector. Natural gas that is associated with oil production is mostly flared but the development of regional pipelines, the expansion of liquefied natural gas (LNG) infrastructure and policies to ban gas flaring are expected to accelerate growth in the sector, both for export and domestic use in electricity generation.

### Total Energy Consumption in Nigeria, by Type (2006)



Source: EIA International Energy Annual 2006

In 2006, total energy consumption for Nigeria was approximately one quadrillion Btu. The country's energy consumption mix was dominated by oil (53 percent), followed by natural gas (39 percent) and hydroelectricity (7 percent). Coal, nuclear and other renewables are currently not part of Nigeria's energy consumption mix, with the exception of biomass often used to meet rural heating and cooking needs.

## Oil

**Nigeria has been an OPEC member since 1971. The country has the second largest oil reserves in Africa and is the continent's primary oil producer. The light, sweet quality of Nigerian crude makes it a preferred gasoline feedstock.**

According to *Oil and Gas Journal (OGJ)*, Nigeria had an estimated 36.2 billion barrels of proven oil reserves as of January 2009. The majority of reserves are found along the country's Niger River Delta and offshore in the Bight of Benin, the Gulf of Guinea and the Bight of Bonny. Current exploration activities are mostly focused in the deep and ultra-deep offshore with some activities planned in the Chad basin, located in the northeast of the country.

Nigeria is an important oil supplier to the United States. Over half of the country's oil production is exported to the United States (see exports below) and the light, sweet quality crude is a preferred gasoline feedstock. Consequently, disruptions to Nigerian oil production impacts trading patterns and refinery operations in North America and often affect world oil market prices.

Since December 2005, Nigeria has experienced increased pipeline vandalism, kidnappings and militant takeovers of oil facilities in the Niger Delta. The Movement for the Emancipation of the Niger Delta (MEND) is the main militant organization attacking oil infrastructure for political objectives, claiming to seek a redistribution of oil wealth and greater local control of the sector. Additionally, kidnappings of oil workers for ransom are common and security concerns have led some oil services firms to pull out of the country and oil workers unions to threaten strikes over security issues.

The instability in the Niger Delta has caused significant amounts of shut-in production and several companies declaring *force majeure* on oil shipments. EIA estimates Nigeria's nameplate oil production capacity to be around 2.7 million barrels per day (bbl/d) but as a result of attacks on oil infrastructure, 2008 monthly oil production ranged between 1.8 million bbl/d and 2.1 million bbl/d. Additional supply disruptions for the year were the result of worker strikes carried out by the Petroleum and Natural Gas Senior Staff Association of Nigeria (PENGASSAN) that shut-in 800,000 bbl/d of ExxonMobil's production for about 10 days in late April/early May.

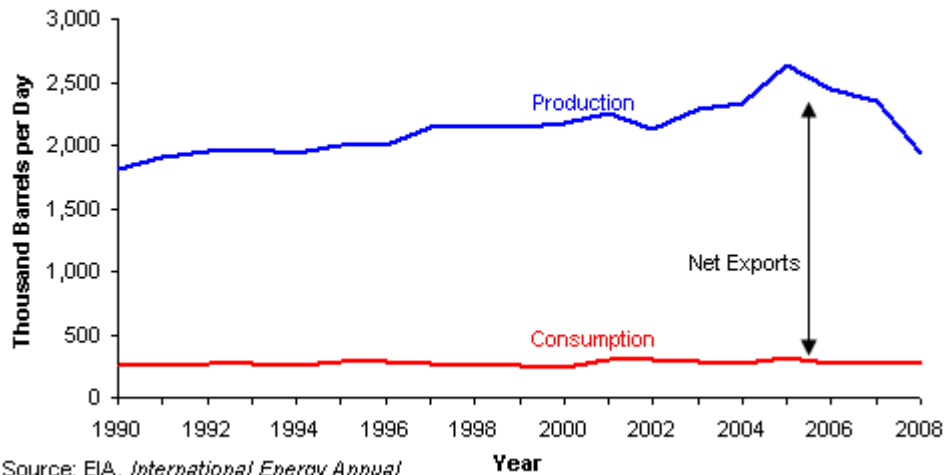
## Production

In 2008, Nigerian crude oil production averaged 1.94 million bbl/d, making it the largest crude oil producer in Africa. If current shut-in capacity were to be back online, EIA estimates that Nigerian production could have reached 2.7 million bbl/d in 2008. As a member of the Organization of Petroleum Exporting Countries (OPEC), Nigeria has agreed to abide by allotted crude production limits that have varied over the years but do not appear to have an impact on production volumes or investment decisions to the same degree as unrest in the Niger Delta.

The major foreign producers in Nigeria are Shell, Chevron, ExxonMobil, Total, and Eni/Agip. Recent developments in the upstream sector include the start up of the Chevron-operated Agbami field in September 2008, with expected peak production of 250,000 by the end of 2009.

Non-crude petroleum production was about 230,000 bbl/d in 2008, bringing total oil production to 2.17 for the year. This amount should increase in the short-term with Total's Akpo condensate field coming onstream in 2009 and expected to peak at 180,000 bbl/d.

**Nigeria's Oil Production and Consumption, 1990-2008**

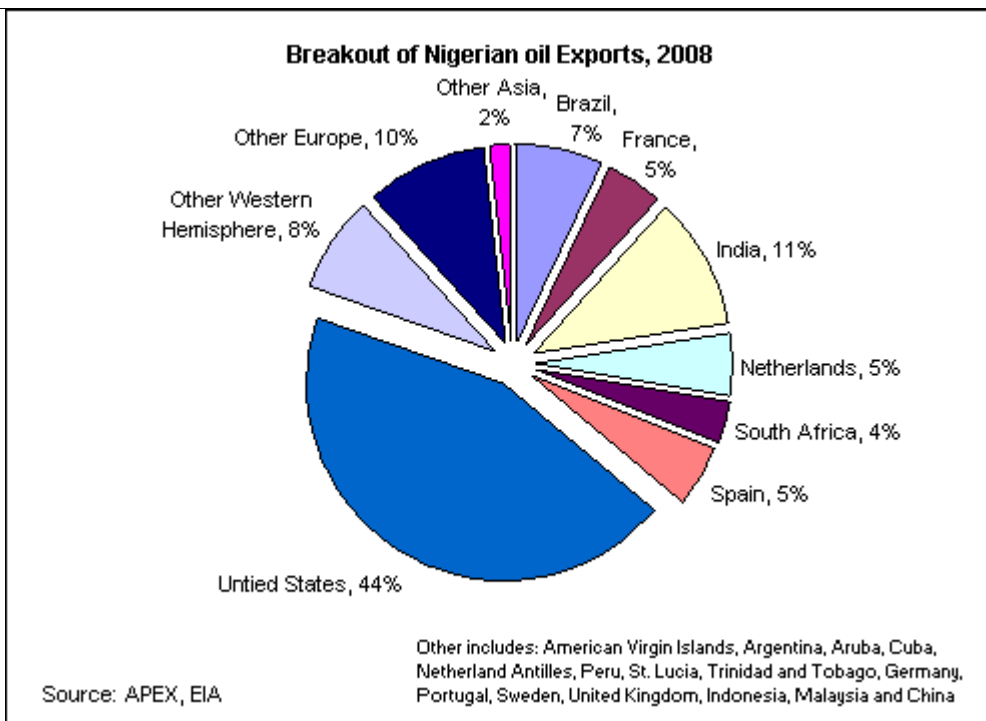


Source: EIA, *International Energy Annual*  
*Short Term Energy Outlook* March 2009

#### Exports

In 2008, Nigerian exported most of its 2.17 million bbl/d of oil production (approximately 1.9 million bbl/d were exported). Of this, 990,000 bbl/d (44 percent) was exported to the United States, making Nigeria the 5th largest foreign oil supplier to the United States. Over the past year, volatility in Nigerian oil supplies has led some U.S. refiners to stop purchasing Nigerian crudes.

Additional importers of Nigerian crude oil include Europe (25 percent), Brazil (7 percent), India (11 percent) and South Africa (4 percent). Despite shut-in production, Nigerian trade patterns appear to have remained stable over the past year, most of which can be attributed to capacity additions from the Chevron-operated Agbami oilfield in September 2008 combined with slightly decreasing domestic consumption and declining world demand.



Nigeria has six export terminals including Forcados and Bonny (operated by Shell); Escravos and Pennington (Chevron); Qua Iboe (ExxonMobil) and Brass (Eni/Agip) with deeper offshore production being exported directly from the Floating Production Storage and Offloading (FPSO) platforms. According to the Energy Intelligence Group's *International Crude Oil Market Handbook*, Nigeria's export blends are light, sweet crudes, with gravities ranging from API 29 – 47 degrees and low sulfur contents of 0.05 – 0.3 percent. Most Nigerian crudes trade at a premium to Brent, the North Sea benchmark crude.

### Refining

In 2008, Nigeria consumed approximately 286,000 bbl/d of oil. According to the *OGJ*, Nigeria has four refineries (Port Harcourt I and II, Warri and Kaduna) with a combined capacity of around 500,000 bbl/d. In February 2009, a Nigerian National Petroleum Corporation (NNPC) official reported that only one of these refineries was operational but running below capacity. As a result, the country is currently importing almost 85 percent of refined products. Problems in the refining sector are attributed to corruption, poor maintenance, theft, and fire. Recent conflicts have also interrupted the flow of crude into the refineries and forced them to shut down.

In order to increase investment and improve performance of the refining sector, the government has ongoing plans to privatize the refineries and end price subsidies. Current subsidy schemes lead producers to sell crude overseas rather than to local refineries and therefore add to increasing volumes of refined product imports. However, these plans are regularly opposed by workers unions and opposition parties.

### Sector Organization

In 1977, Nigeria created NNPC. At that time, NNPC's primary function was to oversee the regulation of the Nigerian oil industry, with secondary responsibilities for upstream and downstream developments. In 1988, the Nigerian government divided the NNPC into 12 subsidiary companies in order to better manage the country's oil industry. The majority of Nigeria's major oil and natural gas projects (95 percent) are funded through joint ventures (JVs), with the NNPC as the major shareholder. The largest JV is operated by Shell Petroleum Development Company (SPDC). Additional foreign companies operating in JVs with the NNPC include ExxonMobil, Chevron, ConocoPhillips, Total, Eni/Agip and Addax Petroleum. The remaining funding arrangements are comprised of production sharing contracts (PSCs), which are mostly confined to Nigeria's deep offshore development program.

The government has been planning to transform NNPC into a more profit-driven company that can seek out private funds in the market. While these discussions have been underway for many years, a reform bill was submitted to the National Assembly in early 2009 that would restructure NNPC into an independent limited liability company.

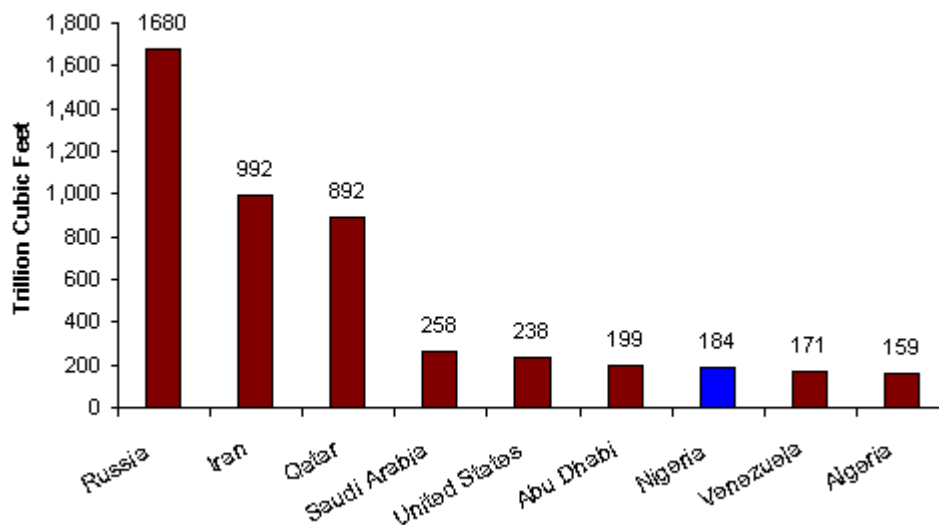
## Natural Gas

**The Nigerian natural gas sector is expected to grow as new infrastructure is developed and the government implements zero gas flaring policies.**

### Overview

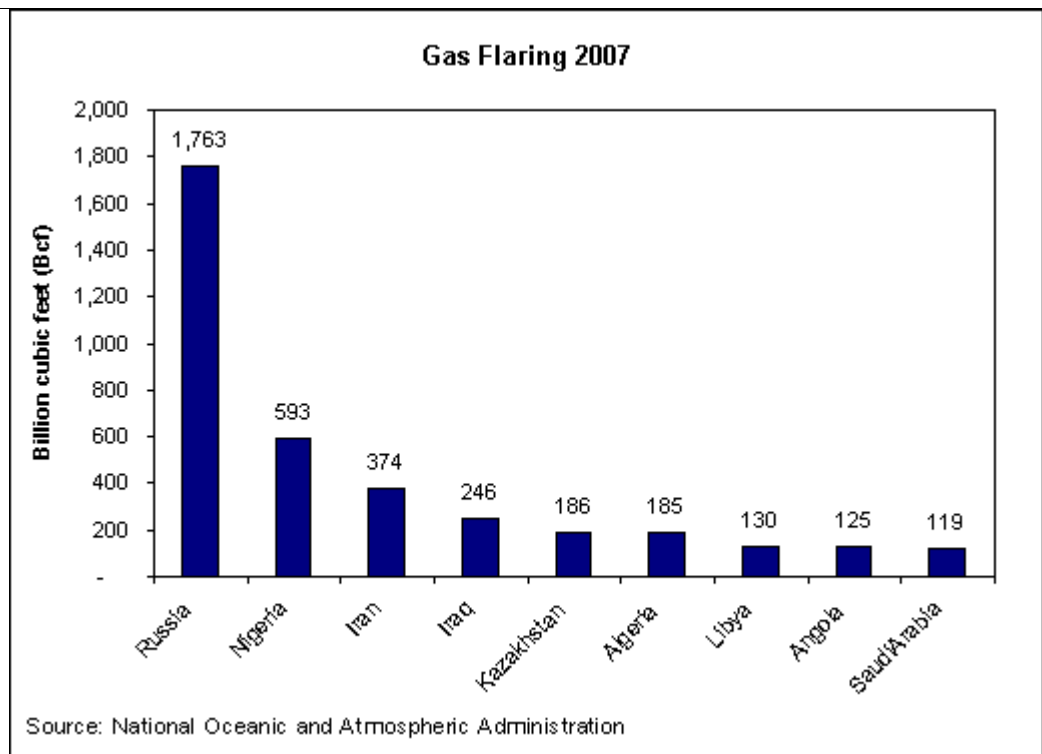
*Oil and Gas Journal (OGJ)* estimates that Nigeria had 184 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2009, which makes Nigeria the seventh largest natural gas reserve holder in the world and the largest in Africa. The majority of the natural gas reserves are located in the Niger Delta. In 2007, Nigeria produced 1,204 billion cubic feet (Bcf) of natural gas, while consuming 456 Bcf. Approximately 749 Bcf were exported, mostly as liquefied natural gas (LNG). In 2007, Nigerian exports of LNG to the US were 95 Bcf, making it the third largest source of LNG imports after Trinidad (447 Bcf) and Egypt (115 Bcf).

**Top Proven Natural Gas Reserve Holders, 2009**



Source: *Oil and Gas Journal 2009*

Because many of Nigeria's oil fields lack the infrastructure to produce and market associated natural gas, it is often flared. According to the National Oceanic and Atmospheric Administration (NOAA), Nigeria flared 593 Bcf of natural gas in 2007, which, according to NNPC, cost the country US\$ 1.46 billion in lost revenue. The government of Nigeria has been working to end natural gas flaring for several years but the deadline to implement the policies and fine oil companies has been repeatedly postponed with some analysts pushing the date as far forward as 2012. In 2009, the Nigerian government developed a Gas Master Plan that would promote new gas-fired power plants to help reduce gas flaring and provide much-needed electricity generation.



The Nigerian natural gas sector is also affected by the security issues in the Niger Delta. Projects are often delayed or shut-in as a result of sabotage, bunkering, and general insecurity. Most recently, the Escravos Gas to Liquids (GTL) project was delayed until 2012 (from 2010).

## Exports

### *Liquefied Natural Gas (LNG)*

A significant portion of Nigeria's natural gas is processed into LNG. Nigeria's most ambitious natural gas project is the Nigeria Liquefied Natural Gas (NLNG) facility on Bonny Island. Partners including NNPC, Shell, Total and Agip completed the first phase of the facility in September 1999. NLNG currently has six trains and a production capacity of 22 million tons per year. A seventh train is under construction but this addition has been delayed until 2012. Despite the above mentioned problems, the Total operated Akpo field came on stream in March 2009 and is expected to provide 9.1 cubic meters per day of gas to NLNG's train six.

### *International Pipelines*

In addition to LNG, Nigeria plans to export some of its natural gas via pipelines. The West African Gas Pipeline (WAGP) is expected to be complete by early 2010 after several delays. The 420-mile pipeline will carry natural gas from Nigeria to Ghana via Togo and Benin. Initial capacity is estimated at 200 million cubic feet per day (MMcf/d), eventually reaching full capacity of 450 MMcf/d with some interest in expanding the pipeline further west to Cote d'Ivoire.

## West African Gas Pipeline

Source: West African Gas Pipeline Company Ltd.



Nigeria and Algeria continue to discuss the possibility of constructing a Trans-Saharan Gas Pipeline (TSGP). The 2,500-mile pipeline would carry natural gas from oil fields in Nigeria's Delta region to Algeria's Beni Saf export terminal on the Mediterranean. In 2009 the NNPC signed a memorandum of understanding (MoU) with Sonatrach, the Algerian national oil company in order to proceed with plans to develop the pipeline. Several national and international companies have shown interest in the US\$ 12 billion project including Total and Gazprom.

## Profile

### Energy Overview

<b>Proven Oil Reserves (January 1, 2009E)</b>	36.2 billion barrels
<b>Oil Production (2008E)</b>	2.17 million barrels per day, of which 90% was crude oil (1.94 million).
<b>Oil Consumption (2008E)</b>	286 thousand barrels per day
<b>Net Oil Exports (2008E)</b>	1,883 thousand barrels per day
<b>Crude Oil Refining Capacity (2007E)</b>	505 thousand barrels per day
<b>Proven Natural Gas Reserves (January 1, 2009E)</b>	184 trillion cubic feet
<b>Natural Gas Production (2007E)</b>	1,204 billion cubic feet
<b>Natural Gas Consumption (2007E)</b>	456 billion cubic feet
<b>Net Natural Gas Exports (2007E)</b>	749 billion cubic feet
<b>Recoverable Coal Reserves (2005E)</b>	209 million short tons
<b>Coal Production (2007E)</b>	0.009 million short tons
<b>Coal Consumption (2007E)</b>	0.009 million short tons
<b>Electricity Installed Capacity (2006E)</b>	5.96 gigawatts
<b>Electricity Production (2006E)</b>	22 billion kilowatt hours
<b>Electricity Consumption (2006E)</b>	16 billion kilowatt hours
<b>Total Energy Consumption (2006E)</b>	1 quadrillion Btus*, of which Oil (53%), Natural Gas (39%), Hydroelectricity (7%), Coal (0%), Nuclear (0%),
<b>Total Per Capita Energy Consumption (2006E)</b>	7.8 million Btus
<b>Energy Intensity (2006E)</b>	5,901 Btu per \$2000-PPP**

### Environmental Overview

<b>Energy-Related Carbon Dioxide Emissions (2006E)</b>	101 million metric tons
<b>Per-Capita, Energy-Related Carbon Dioxide Emissions (2006E)</b>	0.8 metric tons
<b>Carbon Dioxide Intensity (2006E)</b>	0.6 Metric tons per thousand \$2000-PPP**

## Oil and Gas Industry

<b>Organization</b>	The Nigerian National Petroleum Corporation (NNPC) manages the state-owned oil industry.
<b>Major Refineries</b>	Port Harcourt-Rivers State (150,000), Kaduna (110,000), Warri (125,000), Port Harcourt-Alesa Eleme (120,000),

\* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power.

\*\*GDP figures from Global Insight estimates based on purchasing power parity (PPP) exchange rates.

## Links

### EIA Links

[EIA – Nigeria Country Energy Profile](#)

### U.S. Government

[CIA World Factbook - Nigeria](#)

[NOAA-Defense Meteorological Satellite Program](#)

[U.S. Agency for International Development - Nigeria](#)

[U.S. Census Bureau - Trade with Nigeria](#)

[U.S. Embassy in Nigeria](#)

[U.S. Library of Congress Country Study - Nigeria](#)

[U.S. State Department's Background Notes - Nigeria](#)

[U.S. State Department's Consular Information Sheet - Nigeria](#)

[U.S. State Department's Travel Warning - Nigeria](#)

### Foreign Government Agencies

[Nigerian Embassy in the U.S.](#)

### International Organizations

[African Development Bank: Nigeria](#)

[African Union \(formerly Organization of African Unity\)](#)

[International Monetary Fund \(IMF\): Nigeria](#)

[Organization of Petroleum Exporting Countries \(OPEC\)](#)

[World Bank: Nigeria](#)

### Oil and Natural Gas

[Chevron](#)

[ConocoPhillips](#)

[ExxonMobil](#)

[Nigerian National Petroleum Corporation](#)

[Shell](#)

[Total](#)

[All Africa News Service: Nigeria](#)

[BBC News Country Profile - Nigeria](#)

[Nigeria Web](#)

[Nigeria World](#)

[Online Nigeria Portal](#)

[Stanford University African Studies: Nigeria](#)

[University of Pennsylvania African Studies Center - Nigeria](#)

[Voice of Nigeria](#)

## Sources

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AP Worldstream  
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Hart's Africa Oil and Gas  
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International Oil Daily  
Oil and Gas Journal  
OPEC Statistical Bulletin  
Panafrican News Agency  
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