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COUNTRY ANALYSIS BRIEFS

Angola

Last Updated: January 2007

Background

Angola, a significant Sub-Saharan Africa oil producer, joined the Organization of Petroleum Exporting Countries (OPEC) in January 2007.

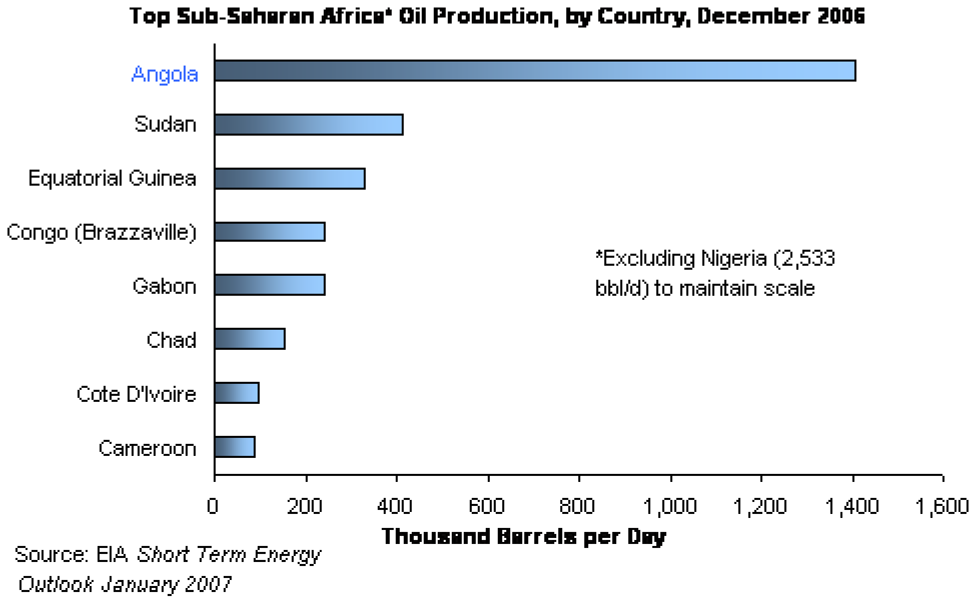
On January 1, 2007, Angola became the 12th member of the Organization of Petroleum Exporting Countries (OPEC). As an OPEC member, Angola will have to pay $2 million per year in membership fees and might be restricted by OPEC quotas on oil production. Angola is the second largest oil producer in Sub-Saharan Africa behind Nigeria. Angola is set to experience oil production increases over the next five year period as new offshore projects come online. Angola exports crude oil primarily to China, the United States, Europe and Latin America. The majority of natural gas produced in Angola is either flared or used in oil recovery. To help reduce flaring, Chevron and Sonangol are planning to build a five-million-ton liquefied natural gas (LNG) plant, which could be operational in 2010.

Oil

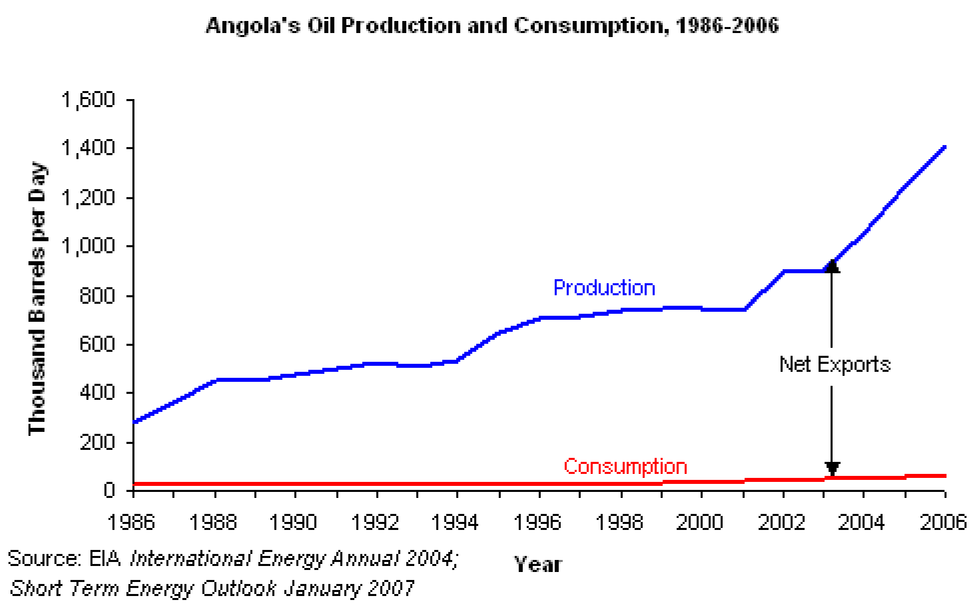
Angola is the second largest oil producer in Sub-Saharan Africa behind Nigeria.

Overview

According to *Oil and Gas Journal* (*OGJ*), Angola had proven oil reserves of 8.0 billion barrels as of January 2007. The majority of the reserves are located in Angola’s offshore blocks. Blocks 15 and Zero have been the most prolific offshore blocks. Proven reserves are also located onshore near the city of Soyo. The majority of Angolan oil is medium to light crude (30 degrees – 40 degrees API) with a low sulphur content (0.12 percent - 0.14 percent).



Angola's crude oil production has more than quadrupled over the past two decades. In 1986, crude oil production averaged 280,000 barrels per day (bbl/d), while production in 2006 averaged 1.4 million bbl/d. According to EIA estimates, Angolan oil production is set to reach two million bbl/d by 2008, when new deep-water production sites are expected to come online. Also consistent with EIA estimates, in December 2006, the World Bank announced that Angola will likely see peak oil production in 2011 at 2.6 million bbl/d followed by production declines if there are no new oil discoveries. Angola consumes small amounts of oil (62,000 bbl/d in 2006) when compared with oil production. However, oil consumption is expected to increase as infrastructure is refurbished and expanded.



Exports

Angola exports crude oil primarily to China (477,000 bbl/d as of November 2006) and the United States. In 2005, the United States imported approximately 473,000 bbl/d of oil from Angola, which made Angola the eighth largest supplier of crude oil to the United States. As of October 2006, the United States had imported an average of 526,000 bbl/d of oil from Angola. Angola also exports crude oil to Europe and Latin America.

Sector Organization

In 1976, the Angolan government created a national oil company (NOC) called the Sociedade Nacional de Combustiveis de Angola (Sonangol). In 1978, Sonangol became the sole concessionaire for oil exploration and production in Angola. Sonangol works with foreign companies through joint ventures (JVs) and production sharing agreements (PSAs), while funding its share of production through oil-backed borrowing. Major international oil companies (IOCs) operating in Angola include BP, Chevron, Devon Energy, ExxonMobil, Maersk, Occidental, Roc Oil and Total.

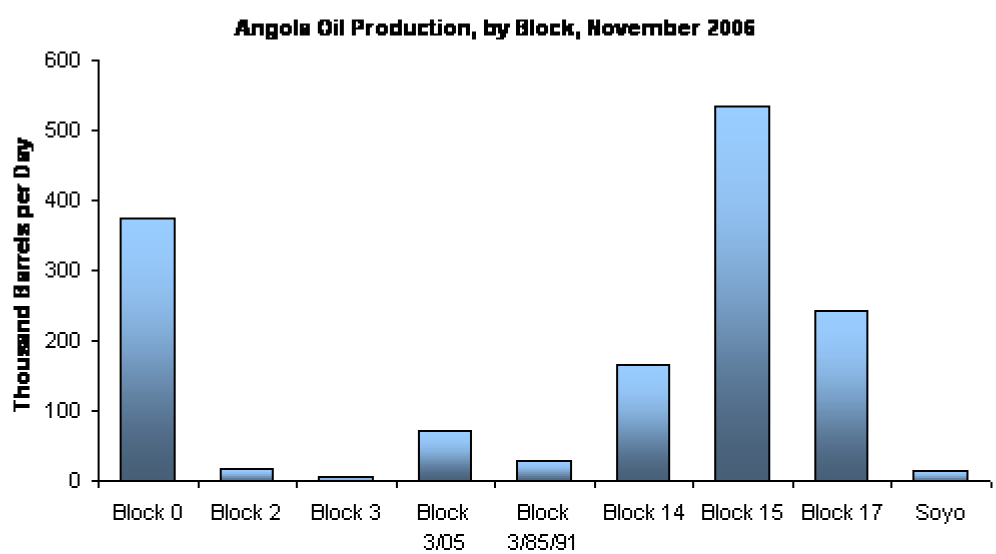
Production

Block Zero

Oil production in Angola is concentrated in numerous onshore and offshore blocks. The offshore blocks are divided into three bands; (band A) shallow water blocks 0-13; (band B) deepwater blocks 14-30, and (band C) ultra-deepwater blocks 31-40. Block Zero is located offshore Cabinda province and accounts for approximately 370,000 bbl/d of Angola's oil production, or almost one-third of Angola's total crude oil production. Block Zero's largest producing oil fields are Takula (Area A), Numbi (Area A), and Kokongo (Area B). In 2005, Chevron brought online the Sanha field gas complex and Bomboco oil field, both of which are located in Block Zero. Production from the fields, which includes oil condensate and liquefied petroleum gas (LPG), is expected to peak at a combined total of 100,000 bbl/d in 2007. Cabinda Gulf Oil Company (CABGOC), a Chevron subsidiary and operator of Block Zero since 1955, has a 39.2 percent share in the JV. In May 2004, Sonangol and the Angolan government extended CABGOC's contract, which was set to expire in 2010, to 2030. Other partners on Block Zero include Sonangol, Total and Eni.

Block 14

In addition to Block Zero, CABGOC is the operator of deepwater Block 14. A total of nine discoveries have been made on the block with Kuito being the first in 1997. In January 2000, CABGOC announced full production (80,000 bbl/d) at its Kuito field, but current production levels have declined to an estimated 57,000 bbl/d. Industry experts have found Kuito crude to be of poor quality when compared with other Angolan crudes and it usually trades at a $5 per barrel discount. In January 2006, CABGOC brought online the first phase of the Benguela, Belize, Lobito, Tomboco (BBLT) project. Oil production from BBLT is expected to increase to 200,000 bbl/d by 2008. In June 2006, CABGOC brought online its Tombua/Landana joint development, with production expected to peak at 100,000 bbl/d by 2010. CABGOC operates Block 14 with 31 percent interest and is joined with partners Eni, Sonangol, Total and Petrogal.



Source: GEPS Reports

Block 15

ExxonMobil is operator of Block 15, the largest producing deepwater block in Angola. Block 15 has estimated recoverable hydrocarbon reserves of 4.5 billion barrels, and at peak production, Block 15 is expected to produce 750,000 bbl/d. In 2003, ExxonMobil brought online Xikomba field, with estimated recoverable reserves of 100 million barrels. Production from Xikomba is currently 70,000 bbl/d. In August 2004, ExxonMobil brought online the $3.4 billion Kizomba-A project, which includes the Chocalho and Hungo fields, and utilizes a floating, production, storage and offloading system (FPSO). Kizomba-A produces 250,000 bbl/d. In 2005, ExxonMobil brought online the Kizomba-B project, which includes the Dikanza and Kissanje fields. Kizomba-B contains an estimated one billion barrels of recoverable oil reserves and operates at peak production of 250,000 bbl/d, with a FPSO system. The Kizomba-C project, which is currently under development, will produce oil from the Batuque, Mondo and Saxi fields. Production on Kizomba-C is slated to begin in 2008, and will peak at 200,000 bbl/d. ExxonMobil operates Block 15 with 40 percent interest and is joined with partners BP, Eni, and Statoil.

Block 17

In December 2001, Total brought online the Girassol oil field, which uses a FPSO with capacity of 250,000 bbl/d. In 2003, Total brought the Jasmin field online, which is considered a satellite field of Girassol and helps maintain plateau production of 250,000 bbl/d. Rosa field, due online in 2007, will also help maintain steady production at Girassol. In December 2006, Total brought online the 225,000 bbl/d Dalia field. Development of Dalia included a FPSO with a 240,000 bbl/d processing capacity and a 2-million-barrel storage capacity. Dalia's recoverable reserves are estimated at 1 billion barrels. Future projects on Block 17 include Pazflor, which will produce an estimated 200,000 bbl/d starting in 2010, and Clov, which will produce 150,000 bbl/d starting in 2011. By 2012, Total expects average production on Block 17 to be 850,000 bbl/d. Total operates Block 17 with a 40 percent share, while Sonangol is its franchise holder. Other shareholders include ExxonMobil, BP, Statoil, and Norsk Hydro.

Exploration

Licensing Rounds

Success in offshore discoveries in Angola has led to increased interest in Angola's exploration blocks. On December 13, 2005 Sonangol launched a licensing round for seven blocks. The blocks for bid included 1, 5 and 6 in the shallow-water (band A) zone and 15, 17, 18 and 26 in the deepwater zone (band B). Among others, Eni, Total, Petrobras and Sinopec placed bids on the blocks. Sinopec bid $2.4 billion for a stake in Blocks 17 and 18. In August 2006, Angola was poised to announce a new licensing round with 12 blocks on offer. There will be eight offshore blocks and four onshore. To date, the most prolific oil producing blocks have been those in the deepwater zone. In addition to licensing rounds, Angola signed various bilateral oil agreements in 2006 with Russia, Sao Tome and Principe, South Korea and Venezuela. The agreements promote increased collaboration on future oil exploration activities in Angola.

Block 4

In 2004, Sonangol made a discovery in Block 4, which is 50 miles offshore Angola. In December 2006, Sonangol awarded French-based Technip a $70 million contract to develop the Gimboa field in Block 4. Development of Gimboa will include 3 production and 4 water-injection subsea wells, which will be tied back to a FPSO, with 1.8 million barrel storage capacity. First oil from the project is expected onstream in the first half of 2008. Sonangol operates the block, with partners Norsk Hydro, Angola Consulting Resources (ACR), and Sociedade Petrolefira Angolana.

Angola's Upcoming Oil Projects

Project	Location	Operator	Peak Production (estimate)	Expected Start-up
Greater Plutonio	Block 18	BP	240,000 bbl/d	May 2007
Gimboa	Block 4	Sonangol	NA	2008
Kizomba-C	Block 15	ExxonMobil	200,000 bbl/d	2008
Kizomba-D	Block 15	ExxonMobil	125,000 bbl/d	2009-approved
Pazflor	Block 17	Total	200,000 bbl/d	2009-approved
Block 31 project	Block 31 NE	BP	130,000 bbl/d	2010-planned
Block 31 project	Block 31 SE	BP	130,000 bbl/d	2010-planned
Clov	Block 17	Total	150,000 bbl/d	2011-planned
Block 32 project	Block 32	Total	130,000 bbl/d	2011-planned

Sources: *Afroil*, BP, *International Oil Daily*, *Petroleum Intelligence Weekly*, *Reuters*, Total, *Upstream*

Block 16

In September 2002, Canadian Natural Resources (CNR) signed a four-year PSA with Sonangol to explore for oil in the deep waters of Block 16, 72 miles off the Angolan coast. In December 2003, CNR announced that its Zenza-1 well encountered shows of hydrocarbons, but they were considered non-commercial. In early 2005, CNR sold its stake in Block 16 to Maersk Oil, which is joined with partners Sonangol, Devon Energy, and Brazil's Odebrecht. To date, no significant oil reserves have been located in Block 16.

Block 17

In addition to the Girassol and Jasmin finds, several other significant discoveries have been made on deepwater Block 17. In the eastern section of the block, Total's Acacia find tested at a combined 13,712 bbl/d of oil from two separate zones, and Hortensia tested at 5,092 bbl/d of oil. In August 2004, Sonangol approved Total's request to award contracts to develop the Rosa Field on Block 17. Development will include the construction of 25 subsea wells tied back to the Girassol FPSO. Production at Rosa is expected to begin in early 2007 at an initial rate of 70,000 bbl/d. In October 2004, Sonangol awarded Italian firm Saipem SpA a $440 million contract to build a subsea pipeline connecting offshore Rosa with onshore facilities near Luanda.

Block 18

In February 2004, Sonangol approved BP's plans to develop the Greater Plutonio project in Block 18. Six fields (Colbalto, Cromio, Galio, Paladio, Platina, and Plutonio) will be developed using a single FPSO. Scheduled to come online in mid-2007, the Greater Plutonio project is expected to produce 240,000 bbl/d. Total cost of the project is $2 - $3 billion. In June 2004, BP awarded FMC Technologies a $27 million contract for the provision of services at the Plutonio project. Three months later, BP announced an additional $80 million contract with FMC for the supply of subsea systems. Two additional discoveries on the block are BP's Chumbo-1 and Cesio-1 wells. BP maintains a 50 percent interest as the operator of Block 18 and Sinopec owns the other 50 percent share. Although India's ONGC Videsh signed an agreement with Shell to buy a 50 percent stake in Block 18 in April 2004, Sonangol refused to approve the purchase. Instead, Sonangol accepted a bid coupled with a $2 billion aid offer from China in October 2004.

Block 24

In February 2003, Devon Energy acquired a 25 percent stake in Block 24 from ExxonMobil. This acquisition increased Devon Energy's total share of the block to 40 percent, making the company the operator of the block. ExxonMobil retains a 20 percent share. Sonangol and Petronas are also partners on the block. ExxonMobil reported the first oil discovery on the block in June 2001, but later declared the Semba-1 non-commercial.

Block 31

In October 2006, BP announced its 11 discovery on Block 31. Industry experts believe Block 31 to contain 500 million barrels of commercial reserves. BP is planning to start front-end engineering and design (Feed) work on the block, with the hope of bringing first oil online by 2010. The block is located 118 miles offshore. BP is operator with 26.67 percent interest and is joined with partners ExxonMobil, Sonangol, Statoil, Marathon, and Total.

Block 32

Total has six discoveries on Block 32, which is located in ultra-deep water, 40 miles from Block 17's Girassol find. Currently, the discoveries are being analyzed for a potential joint venture project. Total, as operator of the block, is joined with partners Marathon Oil, Sonangol, ExxonMobil and Petrogal.

Refining and Downstream

According to *OGJ*, the Fina Petroleos de Angola refinery in Luanda, a JV between Sonangol, Total and private investors, has a crude oil processing capacity of 39,000 bbl/d. The refinery produces almost all of Angola's domestic requirements of gasoline, kerosene and jet fuel, as well as a small amount of products for export.

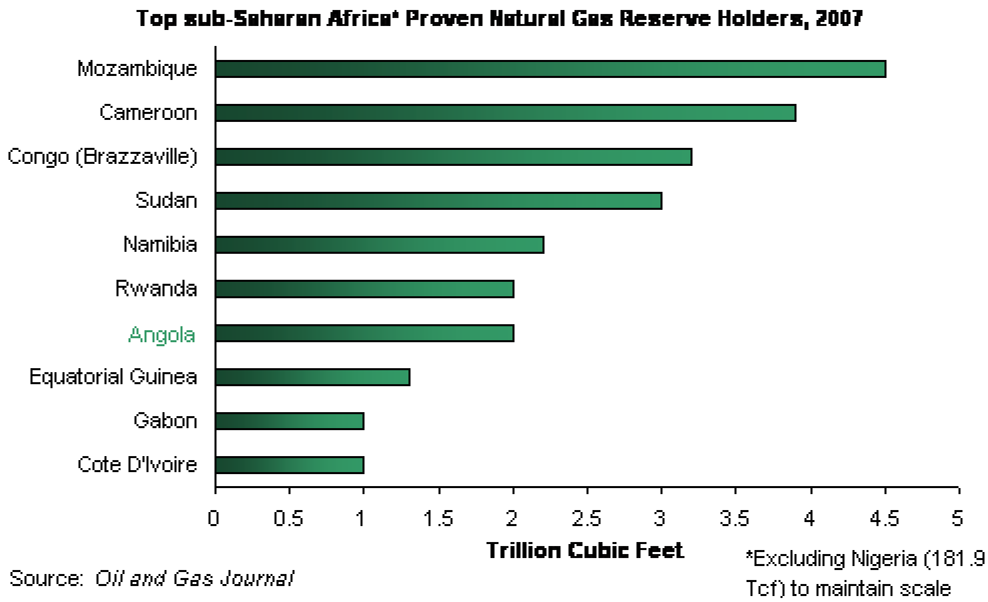
Angola is developing plans for a new 200,000-bbl/d refinery in the coastal city of Lobito. In March 2006, Sinopec agreed to finance the Lobito refinery project, which will be built by Sonangol Sinopec International (SSI). The new refinery will be able to process heavy crudes, such as those found in the Kuito and Dalia fields. Sonangol has estimated that the $3.5 billion refinery could be operational by late 2009.

Since the cessation of armed hostilities in Angola, the domestic demand for oil products is rising. Sonangol estimates that Angolan demand for oil products will grow by 500 percent within 10-20 years. Angola's retail sector, which once boasted over 450 filling stations, has shrunk to 100 outlets. Construction of 120 additional stations is planned over the next several years. Potential stumbling blocks to new construction include the more than $300 million expected cost and the lack of investment from both Sonangol and foreign firms. Sonangol and Galp Energia currently provide product distribution and marketing in Angola.

Natural Gas

Angola currently flares the majority of its natural gas. To reduce flaring, Angola plans to convert natural gas into liquefied natural gas (LNG).

According to *Oil and Gas Journal* (*OGJ*), Angola had 2 trillion cubic feet (Tcf) of proven natural gas reserves as of January 1, 2007. In 2004, Angola produced and consumed 26.5 billion cubic feet of natural gas. Currently, the majority of natural gas produced in Angola is flared, while the remainder is re-injected to aid in oil recovery or processed in the production of liquefied petroleum gas (LPG). Future plans include converting flared natural gas to liquefied natural gas (LNG), natural gas liquids (NGLs), and LPG.



Liquefied Natural Gas (LNG)

Chevron and Sonangol are developing the Angola LNG plant, which will convert associated natural gas resources from several offshore oil fields for export. The project includes constructing a pipeline from Block 17 to a natural gas collection center in Block 2; collected natural gas will be piped to the planned LNG plant near Soyo. The $5 billion plant will be able to produce 5 million tons of LNG per year beginning 2010. Chevron and Sonangol are the principle stakeholders in the LNG project, and they are joined with partners Norsk Hydro, BP, Total and ExxonMobil.

Profile

Country Overview

Chief of State	President Jose Eduardo dos Santos (since September 21, 1979)
Location	Southern Africa, bordering the South Atlantic Ocean, between Namibia and Democratic Republic of the Congo
Independence	11 November 1975 (from Portugal)
Population (2006E)	12,127,071

Economic Overview

Minister of Finance	Jose Pedro de Morais
Currency/Exchange Rate (1/12/07)	1 Kwanza (AOA) = 0.0125 USD

Inflation Rate (2006E)	13.3%
Gross Domestic Product (2006E)	$40 billion
Real GDP Growth Rate (2006E)	15.1%
External Debt (2006E)	$9.4 billion
Exports (2006E)	$32.5 billion
Exports - Commodities	crude oil, diamonds, refined petroleum products, gas, coffee, sisal, fish and fish products, timber, cotton
Exports - Partners (2005E)	US 39.8%, China 29.6%, France 7.8%, Chile 5.4%, Taiwan 4.4%
Imports (2006E)	$12.1 billion
Imports - Commodities	machinery and electrical equipment, vehicles and spare parts; medicines, food, textiles, military goods
Imports - Partners (2005E)	South Korea 20.8%, Portugal 13.6%, US 12.7%, South Africa 7.5%, Brazil 5.6%, France 5.3%, China 5.1%
Current Account Balance (2006E)	$5.9 billion

Energy Overview

Minister of Petroleum	Desiderio da Costa
Proven Oil Reserves (January 1, 2007E)	8.0 billion barrels
Oil Production (2006E)	1.4 million barrels per day, of which 99% was crude oil.
Oil Consumption (2006E)	62 thousand barrels per day
Crude Oil Distillation Capacity (2006E)	39 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2007E)	2.0 trillion cubic feet
Natural Gas Production (2004E)	26.5 billion cubic feet
Natural Gas Consumption (2004E)	26.5 billion cubic feet
Recoverable Coal Reserves (2003E)	None
Coal Production (2004E)	None
Coal Consumption (2004E)	None
Electricity Installed Capacity (2004E)	0.7 gigawatts
Electricity Production (2004E)	2.2 billion kilowatt hours
Electricity Consumption (2004E)	2 billion kilowatt hours
Total Energy Consumption (2004E)	0.1 quadrillion Btus*, of which Oil (71%), Natural Gas (20%), Hydroelectricity (10%), Coal (0%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption ((Million Btu)E)	12.2 million Btus
Energy Intensity (2004E)	4,958.8 Btu per $2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2004E)	19.7 million metric tons, of which Oil (35%), Natural Gas (7%), Coal (0%)
Per-Capita, Energy-Related Carbon Dioxide Emissions ((Metric Tons of Carbon Dioxide) E)	1.7 metric tons
Carbon Dioxide Intensity (2004E)	0.7 Metric tons per thousand $2000-PPP**
Environmental Issues	overuse of pastures and subsequent soil erosion attributable to population pressures; desertification; deforestation of tropical rain forest, in response to both

	international demand for tropical timber and to domestic use as fuel, resulting in loss of biodiversity; soil erosion contributing to water pollution and siltation of rivers and dams; inadequate supplies of potable water
Major Environmental Agreements	party to: Biodiversity, Climate Change, Desertification, Law of the Sea, Ozone Layer Protection, Ship Pollution signed, but not ratified: none of the selected agreements

Oil and Gas Industry

Organization	State-owned Sociedede Nacional de Combustiveis de Angola (Sonangol) oversees offshore and onshore oil operations in Angola
Major Oil/Gas Ports	Luanda, Malango (Cabinda), Palanca, Quinfuquena
Foreign Company Involvement	BP, Chevron, Devon, Eni, ExxonMobil, GALP, Marathon, Norsk Hydro, Occidental, Petrobras, Petronas, Phillips, Roc Oil, Sonangol, Sinopec, Statoil, Total
Major Refinery	Fina Petroleos De Angola – Luanda

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste 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.
**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

EIA - Country Information on Angola

U.S. Government

CIA World Factbook - Angola
Library of Congress Country Study on Angola - 1989
U.S. Agency for International Development: Angola
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U.S. State Department's Consular Information Sheet - Angola
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Stanford University African Studies: Angola
Strategic Road: Angola
University of Pennsylvania African Studies: Angola
Washington Post World Reference: Angola

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BBC World News
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Energy Intelligence Group, Inc.
Factiva, Inc.
GEPS Reports
Global Insight
Global Witness
Human Rights Watch
International Crisis Group
International Oil Daily
International Monetary Fund Country Reports
International Petroleum Finance
Oil and Gas Journal
Petroleum Economist Limited
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Sonangol
United Nations Integrated Regional Information Networks - OCHA IRIN
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