

COUNTRY ANALYSIS BRIEFS

Angola

Last Updated: August 2011

Background

Angola, an OPEC member since 2007, is the second largest oil producing country in Africa and a significant supplier to both China and the United States.

Over the past decade, Angola has become one of the largest crude oil producing countries in Africa, and even briefly became the largest in 2009, surpassing [Nigeria](#) as the latter suffered from attacks on oil infrastructure in the Niger Delta. The oil sector plays an important role in the Angolan economy, accounting for over 95 percent of export revenues and over 75 percent of government revenues according to the [International Monetary Fund](#).

Angola is a member of the Organization of Petroleum Exporting Countries (OPEC) and as such, faces crude oil production limitations set by the organization. Angola's target crude oil production is currently between 1.52 and 1.66 million barrels per day (bbl/d). Despite these limitations, Angola is expected to increase oil production and capacity in the short-term as new offshore projects come online and foreign investment continues to flow into the sector.

Natural gas production in Angola is tied directly to oil production and is often vented or flared, with limited volumes consumed domestically. Developments are underway to capture and market this natural gas for domestic electricity generation and to export most of it in the form of liquefied natural gas (LNG) by 2012.



Angola is still rebuilding the infrastructure destroyed during the country's 27-year civil war that came to an end in 2002. Some security issues remain, specifically in the disputed oil-rich Cabinda enclave where separatist groups are still active. In recent years, [China](#) has provided several multi-billion dollar oil-backed loans to fund infrastructure development. These loans are costly and repayment depends heavily on international oil prices. At the same time, Chinese firms are playing an important role in Angolan recovery while Angola has become one of the leading suppliers of oil to China.

Regionally, uncertainty remains regarding the shared maritime borders of Angola and the Democratic Republic of Congo (Kinshasa). However, the two governments have been working together to promote joint oil developments in the area, specifically in the Lower Congo Basin. Some developments in Blocks 14 and 15 have been postponed pending agreements between the two countries.

According to the [International Energy Agency](#), the country's total primary energy supply consists of mostly combustibles, renewable and waste, accounting for 64 percent of the country's energy balance; oil accounting for 28 percent; natural gas 5 percent and hydroelectricity 3 percent. About 97 percent of Angola's electricity generation comes from hydroelectric sources. Angola's total energy consumption is characterized by large populations living in rural areas with limited access

to electricity.

The country's electrification rate is approximately 26 percent and approximately 13.7 million people lack access to electricity with power shortages among those that do have access. These populations often rely on traditional biomass uses to meet domestic heating and cooking needs. The Angolan government's current infrastructure development priorities focus on electricity with plans underway to repair existing hydroelectric dams and complete a thermal plant in the Zaire province.

Oil

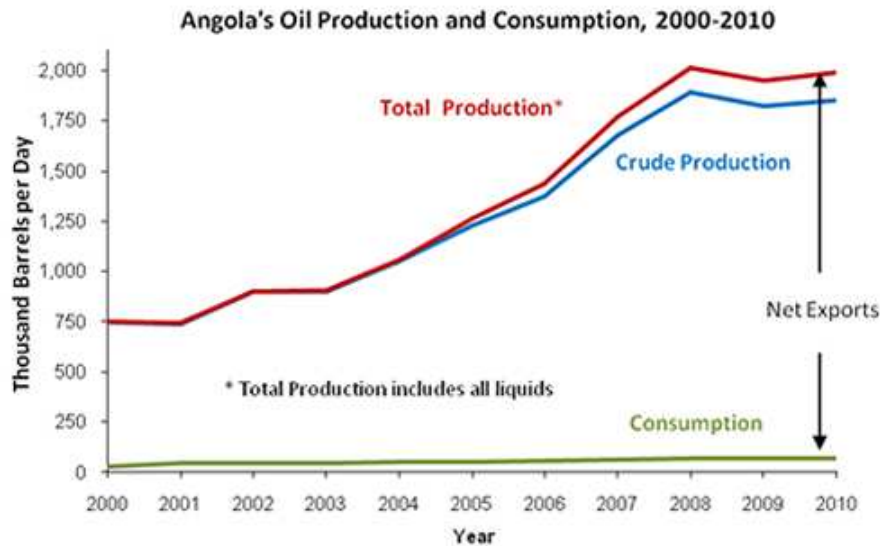
Overview

In 2010 Angola was the second largest crude oil producer in Africa. Planned short-term capacity increases will offset declines in older fields.

According to the *Oil and Gas Journal (OGJ)*, as of January 2011 Angola had proved oil reserves of 9.5 billion barrels while *BP Statistical Review of World Energy* places Angolan proved reserve volumes as high as 13.5 billion barrels. The majority of Angola's oil reserves are located in offshore blocks, in part because onshore exploration was limited as a result of the civil war. However, there are some proven reserves onshore around the northern city of Soyo and also, in the somewhat volatile Cabinda Province.

In 2007, Angola formally became a member of OPEC and in 2009, held the Organization's presidency. As a member of OPEC, Angola's oil production is somewhat constrained by the Organization's crude oil production targets which are estimated to be between 1.52 million bbl/d and 1.66 million bbl/d. In 2010 Angola produced an estimated 1.85 million barrels per day (bbl/d) but in the first half of 2011, these volumes decreased to an average of 1.65 million bbl/d. The drop in production volumes is attributed mostly to technical problems in the ExxonMobil operated Saxi-Batuque fields in Block 15 and problems at the BP-operated Greater Plutonio development in Block 18 (see below). Going into the second half of 2011, Angola's production is expected to return to earlier peaks as these problems are being resolved (adding back about 150,000 bbl/d).

Additional increases are expected in the short-term with the startup of the 220,000 bbl/d Pazflor field (Total) in block 17 expected online later in 2011 and the 150,000 bbl/d PSVM field in Block 31 -- planned for early 2012.

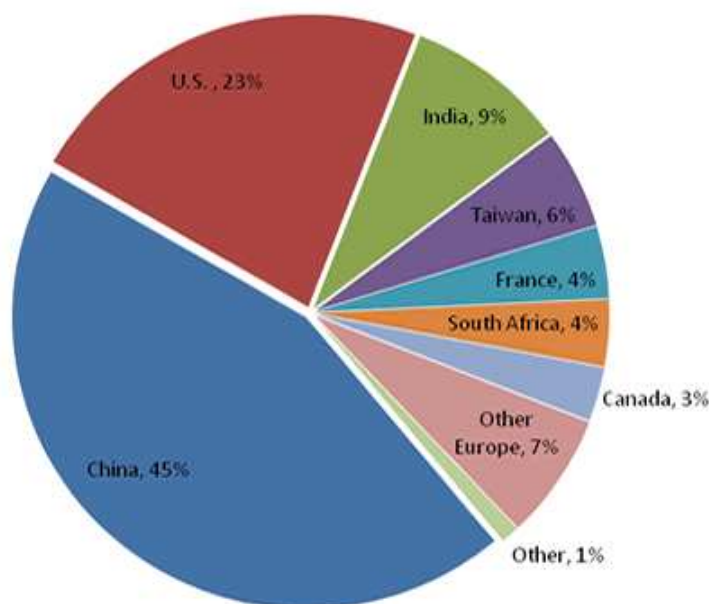


Exports

Oil consumption is estimated to be around 74,000 bbl/d, leaving almost all production for export. The majority of Angolan oil is medium to light crude (30 degrees - 40 degrees API) with low-sulfur content (0.12 percent - 0.14 percent).

In 2010, Angola exported close to 1.8 million bbl/d of crude oil. The majority of Angola's exports went to China and the United States. In 2010, China imported around 790,000 bbl/d of Angolan crude oil according to *FACTS Global Energy*, making Angola the second largest source for Chinese imports after Saudi Arabia (890,000 bbl/d). The second major destination for Angolan exports is the United States, which imported close to 400,000 bbl/d from Angola making the country one of the [top sources for U.S. oil imports](#).

Angola's Crude Oil Exports by Destination, 2010



Source: Global Trade Atlas, FACTS Global Energy, EIA

Exploration and Production

Oil production in Angola is concentrated in numerous offshore blocks. The offshore blocks are divided into three bands; shallow water blocks 0-13 (band A); deepwater blocks 14-30 (band B); and ultra-deepwater blocks 31-40 (band C). Additional blocks are now being designated in the ultra-deepwater offshore lower Congo Basin (click [here](#) to view Sonangol's concession map). Despite the expense of developing the deepwater and ultra-deepwater fields, Angolan oil production has grown rapidly over the past decade and will continue to do so in the short-term. Major existing and future developments are summarized below, production volumes are estimated based on first half 2011 data.

Onshore

Onshore exploration and production activities have mainly focused around the Cabinda province and were halted during Angola's civil war. The Cabinda province is home to separatist movements demanding access to oil revenues and greater participation in oil policy. While the government has appointed members to political positions, and security has improved, clashes still occur between the military and rebels in the area. Some existing wells that were drilled prior to the war and the neighboring Block Zero have proven to be extremely successful (see below).

Offshore

Block Zero: Block Zero is located offshore Cabinda province and is divided into two separate areas with 21 fields. Cabinda Gulf Oil Company (CABGOC), a Chevron subsidiary and operator of Block Zero since 1955, has a 39.2 percent share in the JV. Other partners include Total and Eni. Block Zero currently accounts for approximately 365,000 bbl/d of oil production. Despite natural decline rates for some of the older fields, additional production is expected from Block 0 as drilling and exploration activities continue. Most recently, Chevron started up the Mafumeira Norte project which started up in 2009. An additional project in the block, Mafumeira Sul, is still in the planning phases but once the final investment decision is made, the project is expected to produce as much as 110,000 bbl/d of crude oil.

Block 14: In addition to Block Zero, CABGOC is the operator of neighboring deepwater Block 14 (also offshore Cabinda) with 31 percent interest and is joined by partners Eni, Sonangol, Total and Galp Energia. A total of 11 discoveries have been made on the block with Kuito being the first in 1997.

Production in Block 14 is approximately 220,000 bbl/d, mostly from the Benguela, Belize, Lobito, Tomboco (BBLT) project and the Tombua-Landana project. The Kuito field has been in decline from its 2000 peak of 80,000 bbl/d and appears to be producing at minimal levels. As with Block Zero, further exploration is underway with the possibility of additional developments from the Negage field once Angola and the Democratic Republic of Congo agree on joint development plans.

Block 15: ExxonMobil is operator of Block 15, the largest producing deepwater block in Angola

along with partners BP, Eni and StatoilHydro. Block 15 is located in the Congo Basin and has several active and planned projects underway.

In 2003, ExxonMobil brought online *Xikomba* field, with estimated recoverable reserves of 100 million bbl. Production from *Xikomba* is almost exhausted. In August 2004, the first of the *Kizomba* developments, four floating, production, storage and offloading (FPSO) facilities were brought online:

- The *Kizomba-A* project, which includes the Chocalho, Hungo and Marimba North fields, was the first of the *Kizomba* projects started in 2004. The *Kizomba-A* project is currently producing close to 160,000 bbl/d.
- The *Kizomba-B* project, brought online in 2005 includes the Dikanza and Kissanje fields. *Kizomba-B* contains an estimated 900 million bbl of recoverable oil reserves. Current production is estimated near 170,000 bbl/d.
- The *Kizomba-C* project, consists of the Batuque, Mondo and Saxi fields. Production at the Mondo field came onstream in January of 2008 and the other *Kizomba C* fields came onstream in mid- 2008 with a current combined production of about 160,000 bbl/d.
- The *Kizomba-D* and satellite fields are expected onstream after 2011 adding an additional 150,000 bbl/d in the short-term with additional supplies possible in the medium-term (see table below)

Block 17: Total operates Block 17 with a 40 percent share, while Sonangol is the concession holder. Other shareholders include ExxonMobil, BP, and StatoilHydro. According to Wood Mackenzie, the block is producing around 460,000 barrels of oil equivalent per day. Production started in December 2001 with the startup of the Girassol field and has since been maintained by the startup of Jasimin (2003), Dalia (2006), and Rosa (2007)

Near-term projects on Block 17 include Pazflor and CLOV, which will produce an estimated 200,000 bbl/d and 160,000 bbl/d, respectively (see table below). In 2009, Total also announced a new discovery, Gardenia-1 that confirmed the company's plans to expand activities in the block.

Block 18: The Greater Plutonio development in Block 18 (BP operated) came online in October of 2007 at 100,000 bbl/d. The development consists of five fields: Plutonio, Galio, Paladio, Cromio and Cobalto and was expected to peak at 200,000 bbl/d. However, technical problems at the field relating to its water injection system have cut production from close to peak levels down to around 100,000 bbl/d. At the time of writing, repairs were underway and the field is expected to resume full production late in the second half of 2011.

Upcoming Projects

Despite limitations imposed by OPEC, companies operating in Angola are on track to significantly ramp up their offshore developments in the short- and medium-term. Major projects summarized below represent tie-ins to support existing developments and also new developments that are underway. Industry analysts have estimated that Angolan production capacity could peak between 2.5 and 3 million bb/d by 2016 based on existing discoveries.

| ANGOLA: UPCOMING PROJECTS | | | | |
|---|----------------------------------|---------------------|--------------|-----------------|
| Project | Capacity ('000 bbl/d) | Est. Startup | Block | Operator |
| Tombua-Landana* | 75 | 2011 (peak) | 14 | Chevron |
| PAZFLOR | 200-220 | 2011 (Q4) | 17 | Total |
| PSVM** | 150 | 2012 | 31 | BP |
| Kizomba D - Satellites | 125-150 | 2012 | 15 | ExxonMobil |
| Palas, Ceres, Juno, Astrea, Hebe, Urano, Titania | 150 | 2012+ | 31 | BP |
| Platino, Chimbo, Cesio | 150 | 2013 | 18W | BP |
| Sangos/N'Goma | 85 | 2013 | 15 | ExxonMobil |
| SE PAJ | 150 | 2013 | 31 | BP |
| CLOV | 160 | 2013-2014 | 17 | Total |
| Cabaca Norte-1 | 40 -200 | 2014 | 15 | ExxonMobil |
| Terra Miranda, Cordelia, Porti | 150 | 2014 | 31 | BP |
| Mafumeira Sul*** | 95-110 | 2014-2015+ | 0 | Chevron |
| Negage | 50-75 | 2014-2015+ | 14 | Chevron |
| Lucapa | 100-130 | 2014-2015+ | 14 | Chevron |
| Gindungo, Canela, Gengibre, Mostarda | 120-200 | 2015-2016+ | 32 | Total |

*Startup in 2009

** Plutao, Saturna, Venus, Marte

*** Final Investment Decision in 2011 (Chevron)

Sources: IEA Medium Term Oil and Gas Markets 2011; Oil and Gas Journal; Global Insight; Total; Chevron; Statoil; ExxonMobil

Refining and Downstream

Domestic oil consumption in 2010 was approximately 74,000 bbl/d. The country's one refinery in Luanda, Fina Petroleos de Angola -- a JV between Sonangol, Total, and private investors -- has a crude oil processing capacity of 39,000 bbl/d. The remaining demand is met by imports of gasoline, jet fuel, kerosene, distillate fuel oil, and other products.

Sonangol and the Angolan government have plans for a new 200,000 bbl/d refinery, SonaRef, in the coastal city of Lobito. The project was initially to be built in partnership with Sinopec but the Chinese company withdrew as a result of disagreements regarding the market for products. The lack of a partner and associated lack of financing has delayed the expected startup of the project. The refinery's completion is now slated for sometime after 2015. The new refinery will be able to process heavy crudes, such as those found in the Kuito and Dalia fields and produce products for the domestic market as well as exports. In the interim, the expected demand increases will continue to be met by product imports.

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 and majority shareholder for oil and gas exploration and production in Angola and controls all petroleum industry activities. Sonangol works with foreign companies through joint ventures (JVs) and production sharing agreements (PSAs), while funding its share of production through oil-backed borrowing. There are plans underway to create a National Oil Agency in order to act as regulator and concessionaire in place of Sonangol.

In recent years, Sonangol has become more active in both upstream and downstream operations and the company is also expanding its operations overseas with interests in Brazil, Iraq, and Iran. Major international oil companies (IOCs) operating in Angola include BP, Chevron, Total, ExxonMobil, Eni, Petrobras and Statoil. China's Sinopec and CNOOC are among the national oil companies operating in Angola and are proving to be important players in terms of development aid, oil backed loans and trade. Angola does have local content requirements which have not appeared to slow international investment in the sector.

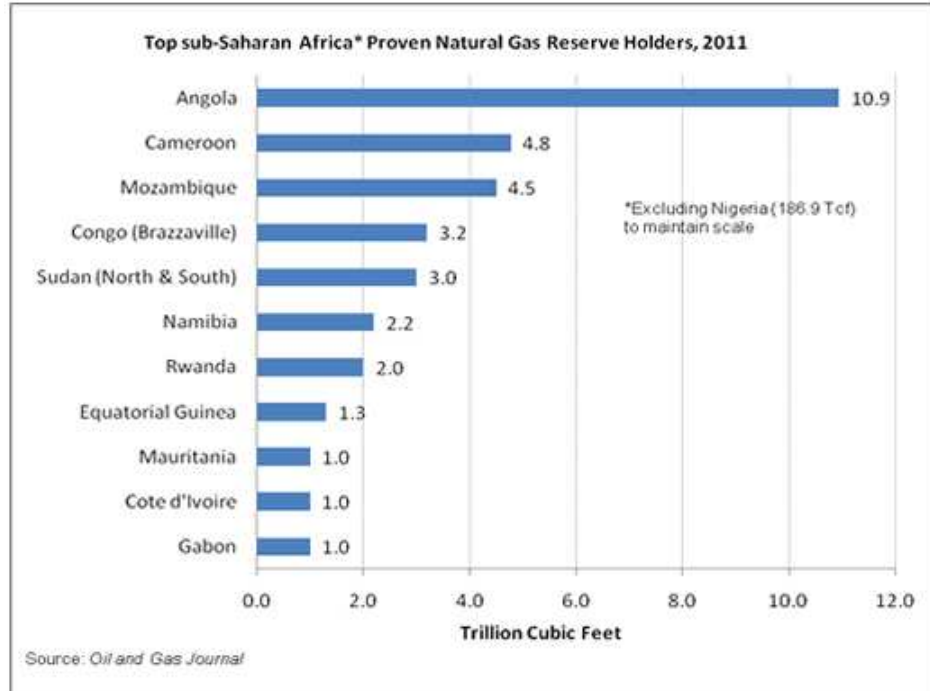
Licensing

Angola's most recent licensing round, held in January of 2011, was a closed round open to several pre-selected IOCs who bid for 11 of the country's pre-salt blocks. The blocks have attracted many of the major IOCs because of the geological similarities that have been reported between Angola and [Brazil's](#) pre-salt areas.

Natural Gas

Angola currently flares the majority of its natural gas but plans are underway to convert natural gas into liquefied natural gas (LNG).

According to the *Oil and Gas Journal (OGJ)*, Angola had 10.9 trillion cubic feet (Tcf) of natural gas reserves as of January 1, 2011-- a significant increase from the 2007 estimated reserves of 2 Tcf. In 2009, Angola's gross natural gas production was approximately 357 billion cubic feet (Bcf). Of this, 244 Bcf (67 percent) was vented or flared, 81 Bcf (23 percent) was re-injected to aid in oil recovery and only 24 Bcf (7 percent) was marketed for domestic consumption.



With the considerable increases in proved natural gas reserves and government policies to end natural gas flaring, plans are underway to convert much of the natural gas into LNG for export with some to be used for domestic electricity production. The government has also announced tax incentives to promote exploration and development of natural gas in the country.

Liquefied Natural Gas (LNG)

Chevron and Sonangol together with other shareholders including Total, BP and Eni are building the country's first LNG plant near Soyo in northern Angola. The plant is expected to be operational by early 2012.



Source: Angola LNG

The natural gas will come from several offshore fields including Total's Block 17, BP's block 18, ExxonMobil's Block 15 and Chevron's blocks Zero and 14. According to the partners, the project will process 1.1 billion cubic feet of associated gas per day and will eventually produce 5.2 million tons per year of LNG plus process up to 125 million cubic feet per day of gas for the domestic market. Initially, the LNG was to be directed to the Gulf LNG regasification plant in Pascaguola, Mississippi, where Sonangol holds a 20 percent share. However, given the current natural gas market conditions in the United States (surplus production and lower prices), Angolan LNG exports will likely be destined for Asian and European markets where prices are higher.

Links

EIA Links

[EIA - Country Information on Angola](#)

U.S. Government

[CIA World Factbook - Angola](#)

[U.S. Agency for International Development: ANgola](#)

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

[U.S. Embassy, Luanda](#)

[U.S. Geological Survey - Africa and Middle East Mineral Information](#)

General Information

[All Africa News Service](#)

[International Energy Agency \(IEA\): Key Energy Indicators for Angola](#)

[U.S.-Angola Chamber of Commerce](#)

International Organizations and Institutions

[African Development Bank: Angola](#)

[African Union](#)

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

[World Bank: Angola](#)

National Links

[Embassy of angola](#)

[National Bank of Angola \(in Portuguese\)](#)

[Sonangol \(National Oil Company\)](#)

International Oil Companies

[BP](#)

[Chevron](#)

[CNOOC](#)

[Eni](#)

[ExxonMobil](#)

[Sinopec](#)

[Total](#)

Sources

Africa Energy Intelligence

AfrOil : Newsbase Africa Oil and Gas Monitor

Business Monitor International  BMI Middle East and Africa Oil and Gas Insights

Central Intelligence Agency Country Reports

Economist Intelligence Unit (EIU) Viewswire

Energy Intelligence Group, Inc.

Global Insight (I.H.S.)

Global Witness

Human Rights Watch

International Oil Daily

Oil and Gas Journal

Petroleum Intelligence Weekly

Platts Oilgram News

Reuters News Corporation

Rigzone

Wood Mackenzie

Contact Info

cabs@eia.gov

(202) 586-8800

cabs@eia.gov