



Background Reference: Angola

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Overview

Angola is one of the largest oil producers in Africa. The country experienced an oil production boom between 2002 and 2008 when production at its deepwater fields began to take off. Angola is also a small natural gas producer, using its natural gas to enhance oil recovery through reinjection. However, most of its natural gas is vented or flared (burned off), although the government is looking to commercialize more of its production. Most of its natural gas production is associated gas coming from oil fields.

Angola's economy is heavily dependent on hydrocarbon production, and its dependence on oil revenue has made its economy vulnerable to crude oil price volatility. The government has been implementing a macroeconomic stabilization program to reduce its fiscal deficit, improve exchange rate flexibility, and strengthen governance to attract greater private sector investment.¹

Sector organization

The Petroleum Activities Law of 2004 appoints the national oil company, the Sociedade Nacional de Combustíveis de Angola (Sonangol), as the national concessionaire, a position that grants Sonangol exclusive rights to explore and produce petroleum resources.² Although the Petroleum Activities Law allows for bidding rounds and open tenders, the government usually invites bids from a select group of companies.³

State ownership of petroleum resources is in the government's 2010 constitution and requires stakeholders to maintain an association with the national concessionaire, Sonangol, to develop the resources. Companies or consortiums looking to develop petroleum resources must go through a selection process, and those that are selected become associates with Sonangol, most often in the form of a production-sharing agreement (PSA).⁴

The Ministry of Petroleum has been responsible for all upstream activities in Angola, although other ministries such as the Ministry of Environment and the Ministry of Finance have some degree of oversight and regulatory powers. The Ministry of Petroleum is also responsible for overseeing the *Angolanization* policy in the upstream industry, which looks to increase the number of Angolans employed in management positions and hired as local contractors.⁵ The regulations also require international oil companies (IOCs) to limit expatriate staffing to 30% of its total workforce and to provide funding for training programs of up to \$200,000 per year, per block during the exploration phase of their operations and \$0.15 per barrel of oil during the production phase. These regulations help improve the technical and financial capacity of Sonangol, its subsidiaries, and Angola's citizens.⁶

IOCs involved with Angola operate under joint-venture operations and PSAs with Sonangol. Sonangol is currently a shareholder in almost all oil and natural gas exploration and production projects in Angola and exerts control through business units and holding companies that operate throughout the oil and natural gas industry, performing functions such as exploration and production, refining and storage, and marketing and distributing crude oil and petroleum derivatives.⁷ Sonangol is in the process of restructuring the organization to increase transparency and attract investor interest in the sector as well as raise revenue to service its debt. Sonangol seeks to divest a number of its non-core assets and to partially privatize Sonangol through an initial public offering of shares, although these plans may be delayed because of the outbreak of COVID-19.⁸

Petroleum and other liquids

Exploration and production

The first commercial oil discovery in Angola was in 1955 in the onshore Kwanza (Cuanza) Basin.⁹ Since that discovery, Angola's oil industry has grown substantially, despite a civil war that lasted from 1975 to 2002. Deepwater exploration in Angola began in the early 1990s and, in 1994, deepwater blocks were licensed, which led to more than 50 significant discoveries. Oil production boomed as several deepwater fields came online from 2002 to 2008. In 2007, Angola became a member of the Organization of the Petroleum Exporting Countries (OPEC).

Most of the proved reserves are located in the offshore parts of the Lower Congo and Kwanza Basins. Most exploration activity in Angola is conducted offshore at depths of more than 1,200 meters (3,937 feet). Most exploration and production activities have been located in the offshore part of the Lower Congo Basin. According to Business Monitor International (BMI) research, recent exploration prospects

are primarily focused on the Lower Congo and Kwanza Basins, and the bulk of the drilling targets deepwater and presalt formations. Most of the drilling is carried out by industry supermajors and Sonangol.¹⁰ Angola's presalt formations, which are geologically similar to Brazil's formations located on its east coast, are estimated to hold large quantities of hydrocarbon resources.

Oil production in Angola comes almost entirely from offshore fields off the coast of Cabinda and deepwater fields in the Lower Congo Basin. Angola's oil production grew by an annual average of 15% from 2002 to 2008 as a result of production that started in several deepwater fields discovered in the 1990s. The first deepwater field to come online was the Chevron-operated Kuito field (Block 14) in late 1999.¹¹ Since then, IOCs led by Total, Chevron, ExxonMobil, and BP have started production at additional deepwater fields and are developing new ones.

Sonangol, with China Sonangol, is exploring Cabinda North. The Australia-based Roc Oil Company initially led exploration at the onshore Cabinda South block, but exploration was later taken over by Pluspetrol Angola, a subsidiary of Argentinian group Pluspetrol, with partners Sonangol and Cubapetroleo. Exploration at the Cabinda South block started in 2007, and production started in late 2013.¹² Somoil, a privately-owned company in Angola, is pursuing exploration activities in the onshore Soyo areas. Somoil is producing small quantities of oil, which are blended and exported with production from the Sonangol-operated fields that compose the Palanca blend. Somoil is the only privately owned company based in Angola that operates oil fields in the country.

Exploration activities in Angola's onshore were limited during the past decades because of the civil war (1975–2002). During the past few years, onshore exploration has resumed but at a much slower pace than offshore activities. Recent onshore exploration activity is mostly conducted in the Lower Congo Basin onshore area in the Cabinda North and South blocks.

Refining and refined oil products

Angola has one refinery in operation. The Luanda refinery, operated by Sonangol, is a simple refinery with a hydroskimming configuration for processing Angola's crude oil blends such as Palanca, Soto, Nemba, and Kuito. The refinery is the main source for refined products used for local consumption.¹³ The Luanda refinery is also currently in the process of upgrading its facilities to expand its refining capacity, and it expects to complete the work by the end of 2021.¹⁴

Three additional refineries in Soyo, Cabinda, and Lobito are currently under development and are expected to come online during the next five years, adding approximately 365,000 barrels per day (b/d) in capacity to Angola's total refining capacity.¹⁵ How the construction timelines have been affected by the outbreak of COVID-19 and by the country's financial position in managing the crisis and servicing its debt burden is unclear.

Petroleum and other liquids exports

Most of Angola's crude oil is medium or light in density, but some grades (such as Kuito) are heavy grades. Nearly all of Angola's oil production is exported because Angola's domestic refining capacity is limited.

The United States has imported oil from Angola since the 1970s, and Angola accounted for 5% of total U.S. crude oil imports between 2005 and 2009, supplying an annual average of 484,000 b/d during that period. U.S. imports of oil from Angola decreased to marginal levels since then in terms of the absolute volume and share as a result of the [growth in U.S. light, sweet crude oil production](#).

Natural gas

Exploration and production

Most of Angola's natural gas production is associated gas at oil fields, and it is vented and flared (burned off) or reinjected into oil wells to enhance oil recovery. Angola lacks the infrastructure to commercialize more of its natural gas resources.

Angola's liquefied natural gas (LNG) plant, which is located in Soyo, was developed to commercialize more of its natural gas and reduce natural gas flaring.¹⁶ In addition, Angola LNG, the operator of the Angola LNG facility, plans to develop some previously discovered nonassociated natural gas fields, particularly in shallow water Blocks 1 and 2. Angola LNG is a consortium that includes Chevron (36.4%), Sonangol (22.8%), Total (13.6%), BP (13.6%), and Eni (13.6%). According to Angola LNG, the \$10 billion LNG project was the largest single investment in Angola's history. The plant was built with a capacity to produce 5.2 million tons per year (250 billion cubic feet per year) of LNG, as well as natural gas plant liquids.¹⁷

With offshore oil exploration continuing at a rapid pace, Angola will need to address its capacity for processing the large volumes of associated gas its oil operations will continue to produce. Improving LNG capabilities, developing the domestic market for commercial natural gas, and applying enhanced oil recovery techniques will be important components to Angola's natural gas strategy moving forward.

Natural gas exports

LNG exports are the only method Angola has to export natural gas. Angola began exporting LNG in 2013 when the Angola LNG plant came online, but the plant had several technical issues that led to a temporary shutdown in 2015. Angola LNG eventually resumed commercial operations in 2016.¹⁸

Investments in cross-border pipelines have been discussed, but they are unlikely to occur in the near future. Angola exported LNG in 2013 for the first time, which totaled 15.2 billion cubic feet (Bcf) that year to Brazil, Japan, China, and South Korea.¹⁹ The Angola LNG plant in Soyo resumed commercial operations in September 2016 after resolving a number of technical issues that led to temporary shutdowns.

Energy consumption

Low fuel prices in Angola have contributed to rising oil demand. According to a [report by the World Bank on Angola's fuel subsidy reform](#), fuel prices in Angola are among the lowest in the world. From September 2014 to January 2016, the government implemented a series of fuel price increases, removing all fuel subsidies except a 40% subsidy for liquefied petroleum gas and a 10% subsidy for kerosene. The government successfully implemented the subsidy reforms without significant social unrest because of the timing of the reforms, which coincided with the fall in crude oil prices, and because of the social protection programs adopted with the World Bank, which helped alleviate the economic impact on vulnerable segments of the population.²⁰

According to latest estimates by the World Bank Group, approximately 52% of Angolans live below the extreme poverty line (less than \$1.90 per day, based on 2011 levels of purchasing power parity). Most people use traditional solid biomass and waste (typically consisting of wood, charcoal, manure, and crop residues) to meet off-grid heating and cooking needs, mainly in rural areas where the electrification

rates are much lower than in urban areas. Latest estimates by the World Bank indicate that 43% of the population (74% in urban areas) had access to electricity in 2018.²¹

Electricity

The government of Angola has prioritized the development of the electricity sector to meet the growing energy needs of the population and has set a goal of 9.9 gigawatts (GW) of installed generation capacity and 60% electrification rate by 2025.²² Much of the increase in capacity is expected to come from hydropower and natural gas, although the government has incorporated 800 megawatts (MW) in renewable energy (500 MW in biomass and 100 MW each in wind, solar, and small-scale hydropower) into the goal.²³

The government also looks to improve the country's transmission and distribution networks, which were significantly damaged during the 27-year civil war (1975–2002), and to help bring electricity to the country's remote rural regions. With the aid of the African Development Bank, the government has embarked on major reforms in the power sector to improve its legal and regulatory framework, attract private investment, and strengthen the financial position of the utilities. The restructuring has strengthened the Instituto Regulador do Sector Eléctrico (IRSE), which provides regulatory oversight of the power sector, and the General Electricity Law in 2015, which established a legal framework for independent power generation.²⁴ The restructuring also led to the creation of three public utilities, Empresa Pública de Produção de Electricidade (PRODEL), Empresa Rede Nacional de Transporte de Electricidade (RNT), and Empresa Nacional de Distribuição de Electricidade (ENDE), which manage the generation, transmission, and distribution activities, respectively, in the country. Gabinete de Aproveitamento do Médio Kwanza (GAMEK) was expanded to oversee development and construction of major power projects in the country.²⁵

Angola does not have a national electricity grid, and it instead relies on three independent systems that provide electricity to different parts of the country: the Northern, Central, and Southern systems. The government hopes to link the three independent grids as part of a national grid system and eventually link its grid with neighboring Democratic Republic of Congo and Namibia, who are both members of the Southern African Power Pool (SAPP).²⁶ Angola is a non-operating member of SAPP, a group that promotes cooperation among member countries to create a common electricity market that will provide reliable and affordable electricity to the citizens of member countries.

Renewable energy sources

Hydropower

Hydropower is the dominant source of power generation for the country, primarily from hydroelectric dams on the Kwanza (Cuanza), Catumbela, and Cunene Rivers. Some analysis suggests that the country's potential hydroelectric generating capacity is at least 10 times the current installed capacity.²⁷

Hydropower will continue to be the dominant source for the near future, given the government's focus on developing hydropower capabilities as a source for electricity.

Solar and wind power are potential alternate sources to power generation. [Angola's 2025 Vision](#) outlines the country's long-term energy strategy and highlights some of the studies conducted to identify regions with the greatest potential for solar and wind capacity. However, the country has yet to develop significant solar and wind power generation projects, and whether it intends to pursue such projects in the near future is unclear.

Notes

- In response to stakeholder feedback, the U.S. Energy Information Administration has revised the format of the *Country Analysis Briefs*. As of December 2018, updated briefs are available in two complementary formats: the Country Analysis Executive Summary provides an overview of recent developments in a country's energy sector and the Background Reference provides historical context. Archived versions will remain available in the original format.
- Data presented in the text are the most recent available as of January 25, 2021.
- Data are EIA estimates unless otherwise noted.

¹ International Monetary Fund. 2018 Article IV Consultation Staff Report, IMF Country Report No. 18/156, pg. 4–6, 14.

² Rui Amendoeira and Miguel Soares Branco. “[Angola](#),” *The Oil and Gas Law Review*, 5th ed. December 2017.

³ “Angola Oil & Gas Report, Q2 2018,” BMI Research, January 2018, pg. 46.

⁴ Ibid.

⁵ Ibid.

⁶ Silvana Tordo and Yahya Anouti. “Local Content in the Oil and Gas Sector: Case Studies,” World Bank Group, 2013, pg. 27.

⁷ “[Organization Chart](#),” Sonangol, accessed 10/7/2020. “Sonangol: Government Drivers,” *IHS Markit*, April 2018.

⁸ James Harris. “[Angola | What went wrong with Sonangol?](#)” Risk Advisory, September 22, 2016. Sourav D.

“[Angola’s state oil company Sonangol begins asset sales](#),” financial-world.org, April 28, 2020. Noah Browning, Dmitry Zhdannikov. “[Angolan energy giant made no money from oil in 2019 as debt bites](#),” *Reuters*, September 29, 2020.

⁹ Secretariat of the Organization of the Petroleum Exporting Countries (OPEC), [Angola facts and figures](#), accessed February 2015.

¹⁰ “Angola Oil & Gas Report, Q2 2018,” *BMI Research*, pg. 7.

¹¹ Chevron, “[Chevron Press Release—Chevron Starts Production From Angola’s First Deepwater Oil Field](#),” (January 5, 2000).

¹² Sonangol, [official website](#), accessed March 2015.

¹³ “[Brief history of the Luanda refinery](#),” Sonangol Group, accessed 10/7/2020.

¹⁴ “[REFINERY NEWS ROUNDUP: Most refineries in Africa back online](#),” S&P Global Platts, September 9, 2020.

¹⁵ “[REFINERY NEWS ROUNDUP: Most refineries in Africa back online](#),” S&P Global Platts, September 9, 2020.

¹⁶ “Liquefaction Project Profile, Angola: Angola LNG,” *IHS Markit*, July 25, 2017.

¹⁷ “[About Angola LNG](#),” Angola LNG website, accessed 6/14/2018.

¹⁸ Oleg Vukmanovic. “[Angola LNG Shutdown to Last](#),” maritime-executive.com, May 29, 2014. “[Angola LNG loads first cargo after 2014 shutdown](#),” offshore-energy.biz, June 6, 2016.

¹⁹ [BP 2014 Statistical Review of World Energy](#).

²⁰ “[Angolan fuel prices rise as government lowers subsidy](#),” *Reuters*, January 2, 2016. “Oil & Gas Risk: Upstream Implications of producer country subsidies,” *IHS Markit*, August 2017. For more information on the social protection programs, see World Bank Group, [Republic of Angola Poverty and Social Impact Analysis: Subsidy Reform and Extension of Social Protection Program](#), Report No. ACS19693, June 22, 2016.

²¹ World Bank Group. [World Development Indicators database](#), accessed 10/7/2020.

²² Government of Angola. [Angola Energy 2025: Power Sector Long-term Vision, Executive Summary](#), accessed 6/11/2018.

²³ Government of Angola. [Angola Energy 2025: Power Sector Long-term Vision, Generation](#), accessed 6/11/2018.

²⁴ “[Angola – Energy](#),” [www.export.gov](#), June 22, 2017, accessed 6/11/2018. [World Small Hydropower Development Report 2016](#), United Nations Industrial Development Organization, pg. 111.

²⁵ “[Angola – Energy](#),” [www.export.gov](#), June 22, 2017, accessed 6/11/2018. “[The National Energy and Security Strategy and Policy](#),” Republic of Angola, Ministry of Energy and Water, pg. 5.

²⁶ “[Angola – Energy](#),” [www.export.gov](#), June 22, 2017, accessed 6/11/2018.

²⁷ [World Small Hydropower Development Report 2016](#), United Nations Industrial Development Organization, pg. 112–113.