



Independent Statistics & Analysis

U.S. Energy Information
Administration

Country Analysis Executive Summary: Angola

Last Updated: June 7, 2019

Overview

- Angola is the second-largest oil producer in Africa, following Nigeria. Angola's economy depends heavily on hydrocarbon production, making its economy vulnerable to crude oil price swings. According to the African Development Bank (AfDB), the crude oil and natural gas sector accounted for about 30% of the country's gross domestic product (GDP), 95% of total exports, and about 52% of total fiscal revenue in 2017.¹ The latest International Monetary Fund (IMF) country consultant report also states that real GDP growth is projected to be 2.25% in 2018, compared with a preliminary estimate of -0.8% in 2016. The IMF attributes the rebound in GDP growth to higher oil prices, increasing liquefied natural gas (LNG) production, and improved business sentiment.²

Sector organization

Recent updates

- Sonangol, the national oil company, is undergoing an organizational restructuring, partly in response to the fall in oil prices in 2017 and the need to revitalize upstream investment. President João Lourenço is also looking to strengthen his political control and limit the influence of former President dos Santos and his allies. In November 2017, President Lourenço replaced Isabel dos Santos, his predecessor's daughter, with Carlos Saturnino, who was previously dismissed from Sonangol's board by Isabel dos Santos, as the head of Sonangol. Lourenço has also merged the Ministry of Petroleum and the Ministry of Mining and appointed Diamantino Azevedo as the head of the newly merged Ministry of Petroleum and Mining.³
- President Lourenço also plans to create an independent regulatory body called the Agência Nacional de Hidrocarbonetos e Biocombustíveis (ANHB), which will be responsible for overseeing negotiations of production-sharing contracts with upstream investors. The ANHB will supplant Sonangol's regulatory role as national concessionaire, leaving the company to focus solely on commercial activities.⁴ Implementing the institutional changes requires an updated version of the Petroleum Activities Law to be passed and, once enacted, would most likely begin in early 2019.
- Lourenço issued a number of decrees in May 2018 to attract investors and develop upstream resources. The decree regarding marginal fields reduced the petroleum production tax rate from 20% to 10% and has expanded the definition of a marginal field to include deepwater fields with reserves greater than 300 million barrels if the project's

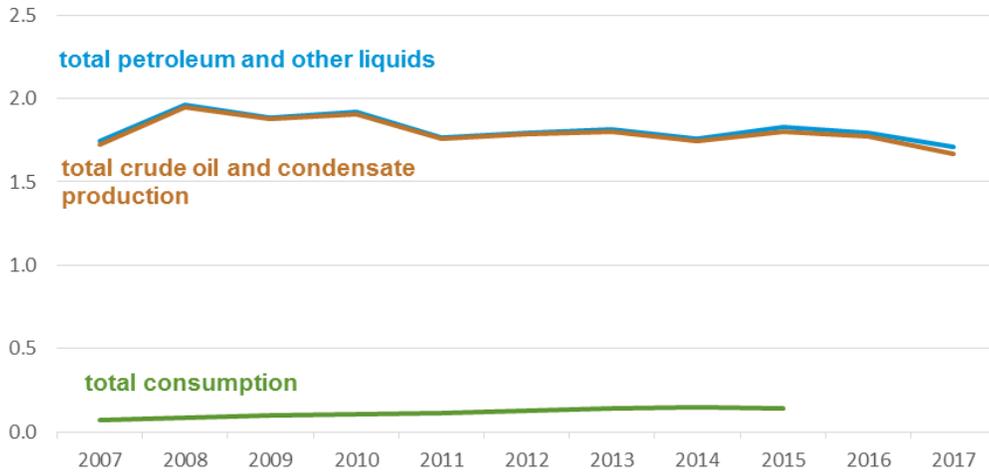
internal rate of return (IRR) is less than 15%. A marginal field was previously defined as a field with reserves less than 300 million barrels.⁵ A decree regarding exploration allows developmental zone boundaries to be redefined if a new discovery extends outside of the area and does not encroach on another contract area's border. Another decree establishing the Natural Gas Framework allows foreign investors ownership rights to associated and non-associated gas reserves. Previously, Sonangol was the sole entity that held ownership rights to natural gas.⁶

Petroleum and other liquids

Exploration and production

- Angola holds 9.5 billion barrels of proved crude oil reserves as of the beginning of 2018, according to the latest estimates from the *Oil & Gas Journal* (OGJ), up from 8.3 billion barrels in the previous year.⁷
- As a member of the Organization of the Petroleum Exporting Countries (OPEC), Angola agreed to a production cut in November 2016, capping their production at 1.67 million barrels per day (b/d). Angola has complied with OPEC's crude oil production cuts since they took effect at the end of 2016.
- Despite some new oil fields coming online, Angola's total liquids production has remained relatively stagnant during the past few years, averaging approximately 1.78 million b/d from 2013 to 2017 (Figure 1). Angola's flat production is the result of persistent technical problems related to water injection systems, natural gas cooling and floating, production, storage, and offloading (FPSO) units associated with some projects. The technical problems have resulted in lengthy maintenance work and disruptions to production at some fields. Rapid reservoir depletion has also contributed to steep decline rates at some fields.
- The Angolan government is looking to attract new investment and develop its hydrocarbon resources through Sonangol's restructuring and legislative changes, but whether or not these changes will be sufficient in improving investor sentiment is unclear. In May 2017, Sonangol canceled the 2015 onshore licensing round that offered 10 blocks in the Lower Congo and Kwanza Basins, citing financial difficulties at the company and an unfavorable oil price climate.⁸ In April 2018, Sonangol announced a bidding round for stakes in Blocks 20 and 21, which were originally owned by Cobalt but whose stakes were sold to Sonangol for \$500 million in a negotiated settlement.⁹ To relieve its debt burden with its contractors, Sonangol is also trying to reduce its stakes in Blocks 15/06, 31, and 32, and although it. Sonangol holds stakes higher than 20%, it is not the operator of those blocks. By reducing its stake, Sonangol hopes to reduce its exposure.¹⁰

Figure 1. Total annual petroleum and other liquids production and consumption in Angola
million barrels per day



Source: U.S. Energy Information Administration

Table 1. Producing oil projects, operators, and loading ports in Angola, 2018

Operator	Partners	Location	Projects	Crude Streams	Loading Ports
BP	Statoil, Sonangol, Marathon, CPCC	Block 31	PSVM (Plutao, Saturno, Venus, Marte)	Saturno	PSVM FPSO
	Sonangol, Sinopec, Dayuan Int'l Dev't	Block 18	Greater Plutonio (Galio, Cromio, Paladio, Cobalto, Plutonio)	Plutonio	Plutonio FPSO
Chevron		Block 0 - Area A offshore	Takula, Malongo, Numbi, Mafumeira Norte		
		Block 0 - Area B offshore	Bomboco, Kokongo, Lomba, N'Dola, Sanha	Cabinda	
			Nemba	Nemba	
	Sonangol, Total, Eni	Block 0	Mafumeira Sul	Cabinda	
	Eni, Sonangol, Total, Galp Energia, SNPC	Joint Dev't Area between Congo Brazzaville and Angola	Lianzi	Lianzi	
	Eni, Sonangol, Total, Galp Energia	Block 14	Kuito, BBLT (Benguela, Belize, Lobito, Tomboco), Tombua-Landana	Nemba	Malongo Terminal
Eni	Sonangol, Sonangol-Sinopec JV	Block 15/06	West Hub phase 1 (Sangos, Mpungi, Gnguvu)		
			West Hub phase 2 (Ochifugu)	Sangos	N'Goma FPSO
			East Hub phase 1 (Cabaca Southeast)	Olombendo	Armada Olombendo FPSO
ExxonMobil	BP, Eni, Statoil	Block 15	Kizomba satellites phase 1 (Mavacola, Clochas)	blended with Hungo & Kissanje	Kizomba A & B FPSOs
			Kizomba satellites phase 2 (Kakocha, Bavuca, Mondo South)	NA	Kizomba B, Mondo FPSOs
			Kizomba A (Hungo, Chocalho)	Hungo	Kizomba A FPSO
			Kizomba B (Kissanje, Dikanza)	Kissanje	Kizomba B FPSO
			Kizomba C (Mondo, Saxi/Butuque)	Mondo, Saxi/Butuque	Mondo FPSO, Saxi/Butuque FPSOs
Total	BP, Statoil, ExxonMobil	Block 17	CLOV (Cravio, Lirio, Orquidea, Violeta)	CLOV	CLOV FPSO
			Pazflor (Perpetua, Acacia, Zinia, Hortensia)	Pazflor	Pazflor FPSO
			Dalia	Dalia	Dalia FPSO
			Girassol		
			Rosa		
			Jasmin	Girassal	Girassal FPSO
			Kaombo Norte (Gengibre, Gindungo, Caril)	Gindungo	Kaombo Norte FPSO
Somoil	Galp Energia, ExxonMobil, Sonangol, Sonangol-Sinopec JV	Block 32			
	ACR, Kotoil, Falcon, Poliedro, Prodoil SARL	Block 2/05	Block 2/05	Palanca	Palanca Terminal
Sonangol	Statoil, Somoil, ACR	Block 4/05	Gimboa	Gimboa	Gimboa FPSO
	Eni, China Sonangol, Angola Japan Oil Co. Ltd., Somoil, INA, NIS	Block 3/05	Bufalo, Palanca, Pacassa, Impala, Cobo, Pambi, Oombo, Caco-Gazela	NA	Palanca Terminal

Source: Business Monitor International Research, Energy Intelligence, www.offshore-technology.com, company filings, Wood Mackenzie

- Several oil projects have begun production and will help maintain or boost current production levels (Table 1). The first phase of the Kaombo deepwater project located in Block 32 came online in July 2018, adding 115,000 b/d of production. The Ochifugu field located in Block 15/06, also known as the second phase of the West Hub development, began production in March 2018, adding 25,000 b/d to production. The Cabaca Southeast field, located in Block 15/06 and also known as the first phase of the East Hub development, began production in February 2018, adding 54,000 b/d to production.
- Angola also has a number of projects coming online during the next few years (Table 2). The Vandumbu and Cabaca North fields in Block 15/06, operated by Eni, and the second phase of the Kaombo deepwater project (Kaombo Sul), operated by Total, are expected to come online in 2019 and add more than 150,000 b/d to total production once peak production levels are reached. A final investment decision was reached in May 2018 regarding the Zinia 2 deepwater project, which is located in Block 17 and tied back to the Pazflor FPSO; the project will add an estimated 40,000 b/d to production.

- Angola has several offshore and deepwater oil projects projected to come online during the next decade. However, project start times could be delayed if global crude oil prices drop or if legislative changes fail to improve the overall business climate. Because several of Angola's older deepwater fields are past their peak production, the new capacity additions from the upcoming projects are more likely to sustain Angola's crude oil production at or slightly higher than current levels during the medium term rather than provide a substantial boost.

Table 2. Upcoming oil projects in Angola

Project	Operator	Location	FID
East Hub phase 2 (Cabaca North)	Eni	Block 15/06	Yes
Kaombo Sul	Total	Block 32	Yes
Zinia Phase 2	Total	Block 17	Yes
Platina	BP	Block 18 West	No, est. 2019
Block 31 West Phase 2	BP	Block 31	No
Future Saxi Tiebacks	ExxonMobil		No, est. late 2018
Gabela	Chevron		No
Malange	Chevron	Block 13	No
Kizomba A - Reco Reco	ExxonMobil	Block 15	No
Kizomba B - Mbulumbumba	ExxonMobil	Block 15	No
Lucaça	Chevron	Block 14	No
Longui	Chevron	Block 0	No
Chesio	BP	Block 18 West	No, est. 2019
Chumbo	BP	Block 18 West	No, est. 2019
Salsa	Total	Block 32	No

Source: Business Monitor International Research, www.offshore-technology.com, company filings

Refining and refined oil products

- Angola's total nameplate refining capacity was 379,000 b/d in 2018. (Table 3). Angola is planning to expand its refining capacity further, but the expansion projects have faced significant delays.

Table 3. Refineries in Angola, 2018

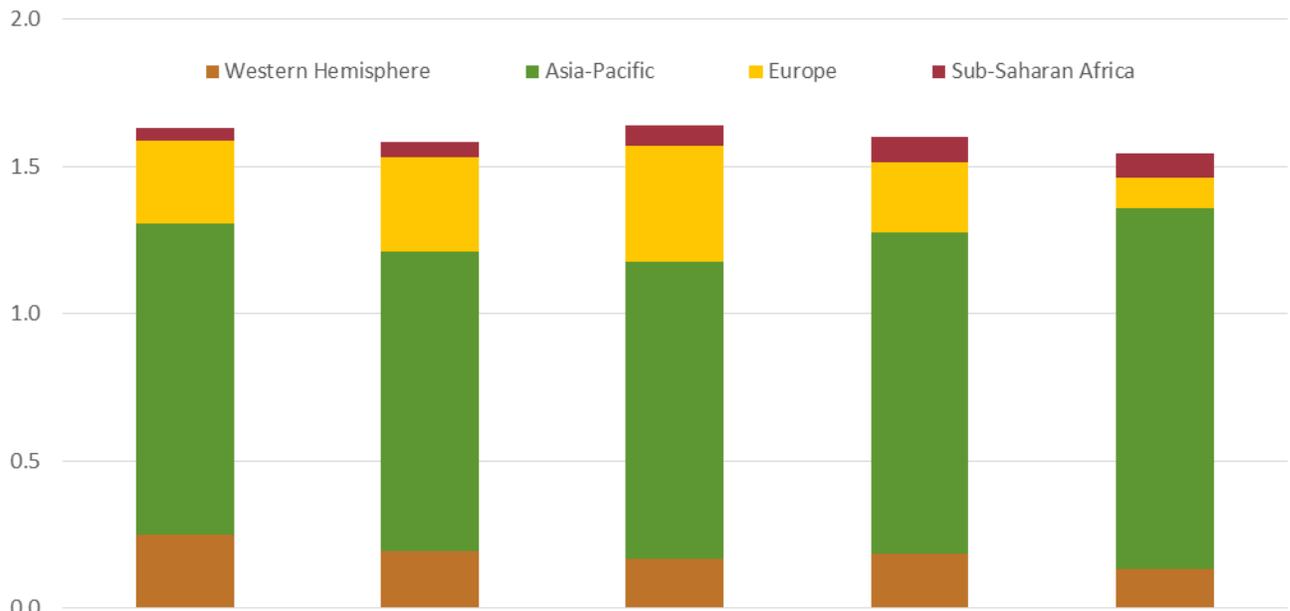
Refinery Name	Location	Status	Nameplate Capacity (b/d)
Luanda	Luanda	Active	65,000
Sonaref	Lobito	Postponed	200,000
Soyo	Zaire	Postponed	110,000
Malongo	Cabinda	Active	4,000
Total			379,000

Source: Business Monitor International Research Service, International Energy Agency, Newsbase

Petroleum and other liquids exports

- In 2017, Angola exported about 1.55 million b/d of crude oil, most of which went to the Asia-Pacific region (Figure 2). China received the largest share of Angola’s exports, at approximately 930,000 b/d, followed by India, which imported about 140,000 b/d.¹¹ Angola was the second-largest supplier of crude oil to China in 2017, following Saudi Arabia. In 2017, the United States imported 129,000 b/d of crude oil from Angola.¹²

Figure 2. Angola crude oil exports by destination region, 2013 -- 2017
million barrels per day



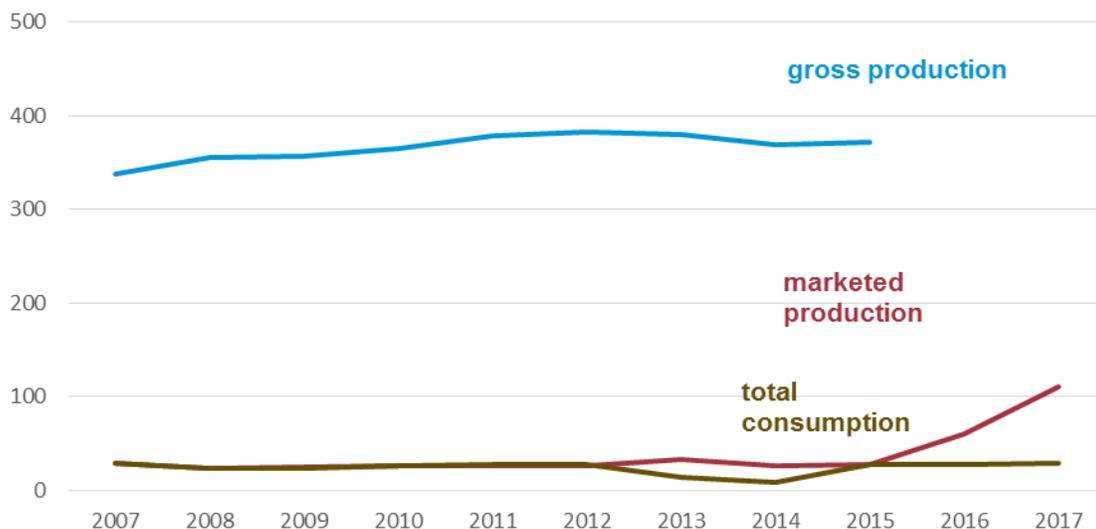
Source: U.S. Energy Information Administration, based on ClipperData vessel tracking data

Natural gas

Exploration and production

- Angola holds an estimated 10.9 trillion cubic feet (Tcf) of proved natural gas reserves, according to the latest *Oil & Gas Journal* estimates for January 1, 2018.¹³
- Angola produces small quantities of marketed natural gas, but most of its production is flared as a by-product of oil operations or is reinjected into oil fields to increase oil recovery. According to Cedigaz data, gross natural gas production in Angola was 413 billion cubic feet (Bcf) in 2016, of which 254 Bcf was vented and flared, 88 Bcf was reinjected, and 60 Bcf was marketed (Figure 3).¹⁴

Figure 3. Annual natural gas production and consumption in Angola
billion cubic feet

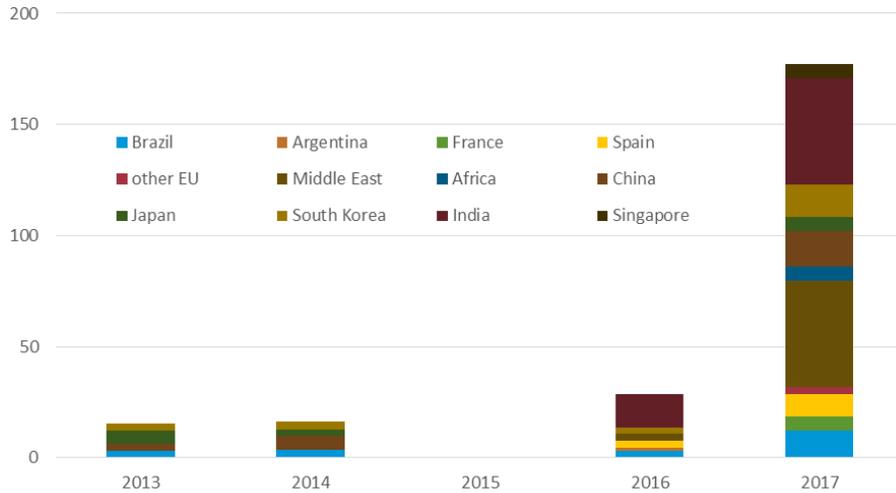


 Source: U.S. Energy Information Administration, Cedigaz

Natural gas exports

- In 2017, LNG exports significantly increased to 177 Bcf and reflected much more diverse destination countries and regions. India and the Middle East received the largest shares of natural gas exports in terms of volume, receiving 48 Bcf each. China, Brazil, and South Korea also significantly increased their LNG imports from Angola from the previous year (Figure 4).¹⁵

Figure 4. LNG exports from Angola, 2013 - 2017
billion cubic feet

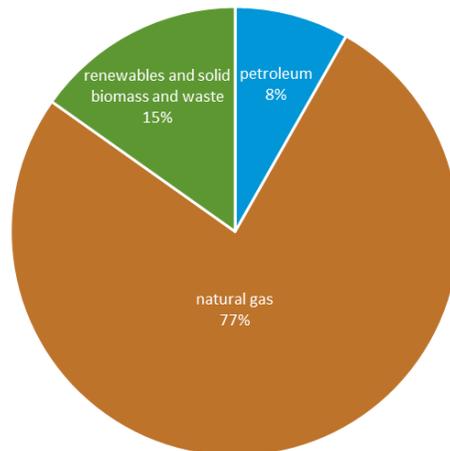


Source: BP Statistical Review of World Energy 2014 - 2018

Energy consumption

- According to the latest estimates, in 2016, 77% of Angola's primary energy consumption was petroleum and other liquids. Other major fuel sources consumed were natural gas and traditional solid biomass and waste (Figure 5). Angola does not have any nuclear capacity nor does it use coal for primary energy consumption.¹⁶

Figure 5. Primary energy consumption in Angola, 2016



Source: U.S. Energy Information Administration

Electricity

- In 2016, Angola generated 10 billion kilowatthours (kWh) of electricity primarily from hydroelectric or fossil fuel sources.¹⁷ The latest estimate from the International Energy Agency indicates that only 35% of Angolans had access to electricity in 2016, leaving 17

million people without access, mostly in rural areas.¹⁸ Problems affecting the electricity sector include insufficient power generation, limited revenue collection (more than 80% of users are not metered), and the lack of highly skilled workers to manage the electricity sector.¹⁹

- The Soyo combined-cycle natural gas turbine (CCGT) plant added 750 megawatts (MW) of total installed capacity in 2017 after plant construction and the connecting pipeline from Angola LNG to the power plant were completed. The Soyo CCGT plant provides an opportunity for Angola to diversify its power infrastructure and to channel some of its natural gas production toward electricity generation. Discussions on expanding the Soyo plant to add another 500 MW of generation have been reported, but no concrete plans have been established.²⁰

Renewable Energy Sources

Hydroelectricity

- Two major hydropower projects, the Cambembe expansion and the Laúca hydroelectric dam, have added substantial hydropower electricity to the country's total installed capacity. The second phase of the Cambembe hydropower plant, which consisted of a 180 MW expansion and four new turbines, was completed in June 2017, adding 700 MW of installed capacity.²¹ In July 2017, the Laúca hydropower plant brought online the first of six 340 MW turbines; the Laúca hydropower plant is expected to be completed by 2018 and provide 2,070 MW of additional installed capacity.²²
- The Caculo Cabaça hydropower plant is also under development. Construction at the 2,170 MW hydropower plant started in July 2017 after funding was secured from China Gezhouba Group Co. Ltd. at an estimated \$4.5 billion. The project is expected to be completed by 2022.²³

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 16, 2019.
- Data are EIA estimates unless otherwise noted.

¹ “2018 African Economic Outlook: Angola,” African Development Bank Group, pg. 2, accessed 6/13/2018.

² International Monetary Fund. 2018 Article IV Consultation Staff Report, IMF Country Report No. 18/156, pg. 4–6, 14.

³ “Sonangol: Government Drivers,” *IHS Markit*, April 2018.

⁴ “Angola’s new president asserts oil sector leadership with moves to improve IOC relations,” *IHS Markit*, October 27, 2017. “Sonangol: Government Drivers,” *IHS Markit*, April 2018. “Angola considers deeper, more challenging road to oil reform,” *IHS Markit*, February 12, 2018.

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- ⁵ Stephan Eisenhammer. "[Angola cuts tax rates for development of marginal oil fields](#)," *Reuters*, May 21, 2018. "Angola Oil: Presidential decrees further brighten growth prospects offshore," *IHS Markit Strategic Horizons*, July 12, 2018.
- ⁶ Stephan Eisenhammer. "[Angola cuts tax rates for development of marginal oil fields](#)," *Reuters*, May 21, 2018. "Angola Oil: Presidential decrees further brighten growth prospects offshore," *IHS Markit Strategic Horizons*, July 12, 2018.
- ⁷ "Worldwide Look at Reserves and Production," *Oil & Gas Journal*, Worldwide Report [Table], December 4, 2017, pg. 21.
- ⁸ "Angola Oil & Gas Report, Q2 2018," *BMI Research*, pg. 7.
- ⁹ "[Angola Opens Bids for Cobalt's Former Oil Blocks](#)," *E&P Magazine*, April 20, 2018. "[Angola's Sonangol says settled dispute with Cobalt International Energy](#)," *Reuters News Agency*, December 19, 2017.
- ¹⁰ "Dividends lead Sonangol to sell stakes in blocks," *Afroil Issue 746, Newsbase Research*, July 17, 2018, pg. 17.
- ¹¹ ClipperData statistical database (vessel tracking database), accessed July 2, 2018.
- ¹² U.S. Energy Information Administration, International Energy Statistics.
- ¹³ "Worldwide Look at Reserves and Production," *Oil & Gas Journal*, Worldwide Report [Table], December 4, 2017, pg. 21.
- ¹⁴ Cedigaz Statistical Database, accessed 6/14/2018.
- ¹⁵ [BP 2018 Statistical Review of World Energy](#). Joe Matthews and Andres Rojas. "Angola LNG: Plant reaches production milestone," *LNG Insight*, IHS Markit, September 28, 2017.
- ¹⁶ International Energy Agency, [World Energy Statistics database](#), accessed 7/9/2018.
- ¹⁷ US Energy Information Administration, International Energy Statistics Database.
- ¹⁸ International Energy Agency, *World Energy Outlook: Electricity access database*, (2017).
- ¹⁹ African Development Bank, [Power Sector Reform Support Program: Angola](#), (April 2014), page 7.
- ²⁰ "Angola Power Report, Q2 2018," *BMI Research*, January 2018, pg. 9. "[Angola – Energy](#)," [www.export.gov](#), June 22, 2017, accessed 6/11/2018.
- ²¹ "[Angola inaugurates Plant II of the Cambembe Hydroelectric Facility](#)," [www.macauhub.com](#), June 30, 2017.
- ²² "[Angola's Lauca dam starts producing power](#)," *African Review of Business and Technology*, July 28, 2017.
- ²³ "[Angolans officials break ground on 2,170-MW Cacula Cabaca hydropower plan, generation begins at 2,070-MW Lauca](#)," [www.hydroworld.com](#), August 7, 2017. "[Angola – Energy](#)," [www.export.gov](#), June 22, 2017, accessed 6/11/2018.