



Independent Statistics & Analysis

U.S. Energy Information
Administration

Country Analysis Executive Summary: Nigeria

Last Updated: June 25, 2020

Overview

- Nigeria is the largest oil producer in Africa. It holds the largest natural gas reserves on the continent and was the world's fifth-largest exporter of liquefied natural gas (LNG) in 2018.¹ Although Nigeria is the leading crude oil producer in Africa, production is affected by sporadic supply disruptions.
- Nigeria's crude oil and natural gas resources are the mainstay of the country's economy. Because Nigeria heavily depends on oil revenue, its economy is noticeably affected by crude oil price changes. The International Monetary Fund (IMF) projects that Nigeria's crude oil and natural gas exports earned \$55 billion in 2018, which is \$23 billion higher than in 2016.² The growth in export revenue, which can be partly attributed to the rebound in crude oil prices, has helped improve Nigeria's fiscal position. However, Nigeria's fiscal deficit remained flat at 4% of its gross domestic product (GDP) because of a significant increase in capital expenditures and lower-than-expected non-oil revenue collection, in spite of improvements to the country's tax administration. The Nigerian government still heavily relies on crude oil and natural gas revenue; its non-oil revenue comprises only 3.4% of GDP, one of the lowest in the world.³

Sector organization

Recent updates

- In September 2018, President Muhammadu Buhari vetoed the Petroleum Industry Governance Bill (PIGB) that was passed by the legislature in March 2018, which delayed efforts to liberalize the oil and natural gas sector and restructure the Nigerian National Petroleum Corporation (NNPC). The PIGB is one of four separate bills that were taken from the previous version, the Petroleum Industry Bill (PIB). Latest reports indicate that the National Assembly is drafting a new version of the PIB and is hoping to pass the bill by the end of 2020, although when or if this action will occur is unclear.⁴
- The Nigerian government passed the Finance Act 2020 in January 2020. This act amends a number of tax laws and is aimed at improving tax participation and collection and modernizing the tax system. Provisions in the bill, such as the Petroleum Profits Tax (which repeals a tax exemption for dividends paid from after-tax profits), a value-added tax (which increases from 5% to 7.5%), and the Companies Income Tax (which requires Nigerian companies to deduct and withhold tax on payments to any foreign company that provides them with technical or professional services), are likely to affect oil and natural gas companies and increase their overall cost of doing business in the country.⁵
- The Finance 2020 Act follows a November 2019 amendment to the 1999 Deep Offshore and Inland Basin Production Sharing Contracts Act, which changed royalty rates for deepwater (specifically greater than 200 meters in water depth) and inland basin

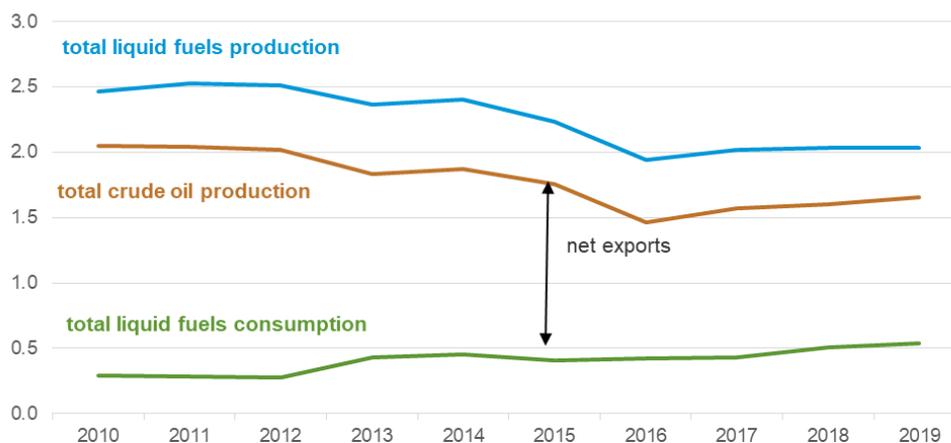
contracts (which comprise onshore basins aside from the Niger Delta) to 10% and 7.5%, respectively. The amendment also introduces an additional royalty tax rate that ranges from 0% to 10% based on the price of crude oil. Given that international oil companies (IOCs) primarily operate in the deepwater fields in Nigeria, this amendment is likely to increase government's share of revenue generated from these fields and to lead investors to re-evaluate their investment plans for currently producing fields as well as new-source development.⁶

Petroleum and other liquids

Exploration and production

- According to the *Oil & Gas Journal*, Nigeria had an estimated 37.0 billion barrels of proved crude oil reserves by the end of 2019—the second-largest amount in Africa after Libya.⁷ The majority of reserves are along the country's Niger River Delta and offshore in the Bight of Benin, the Gulf of Guinea, and the Bight of Bonny.
- As a member of the Organization of the Petroleum Exporting Countries (OPEC), Nigeria renewed its commitment to reduce crude oil production in April 2020, capping its production at 1.41 million barrels per day (b/d).⁸ The agreement takes effect on May 1, 2020, and ends on April 30, 2022.⁹ However, Nigeria's compliance with the OPEC+ agreement has been intermittent; the country has at times produced more than the agreed-upon quota in the past. In addition, Nigeria has designated some of its crude oil streams as lease condensate, which is not subject to the OPEC+ agreement production cuts, which allows Nigeria to circumvent its obligation to reduce production.
- In 2019, Nigeria produced about 2.0 million b/d of petroleum and other liquids, of which 1.65 million b/d was crude oil. The remainder is composed of natural gas plant liquids, other liquids, and refinery processing gains¹⁰ (Figure 1).

Figure 1. Total annual liquid fuels production and consumption in Nigeria
million barrels per day



Source: U.S. Energy Information Administration

- The deepwater Egina project was the latest significant field to come online in Nigeria. The Egina field came online in January 2019 and reached its peak production plateau of 200,000 b/d at the end of 2019. The Nigerian minister of petroleum, Emmanuel Kachikwu, has labeled Egina crude oil as a condensate, in spite of its API gravity and sulfur content being specified at 27° and 0.17%, respectively, a crude oil assay that would place it in the [medium, sweet categories](#).¹¹
- Smaller fields, such as the offshore Gbetiokun field and the onshore Qua Ibo field in the eastern part of the Niger Delta, have provided marginal increases to Nigeria's crude oil production in the past year.¹² These projects have helped to partially offset production declines at Nigeria's older, more mature fields. Other planned deepwater projects have been repeatedly delayed because of regulatory uncertainty surrounding the PIB. In addition, the recent deepwater royalty tax increase may further inhibit investor interest in exploration and development of new offshore fields.
- Exploration activities have largely focused in deepwater and ultra-deepwater offshore fields, partially as a result of security concerns onshore, and many IOCs have divested their onshore assets. The NNPC plans to launch a new crude oil licensing round in mid-2020, although the licensing round will likely be postponed until after the PIB legislation issue is resolved later this year. Whether or not there will be sufficient investor interest if the PIB does not pass is unclear, given the recent amendments to the royalty tax structure for deepwater production.¹³

Table 1. Planned oil projects in Nigeria

Project name	Operator	Type	Location	Production plateau (thousand barrels per day)	Estimated start date
Qua Ibo	NNPC	Crude oil	Onshore	90	2021
Zabazaba-Etan	Eni	Crude oil	Offshore deepwater	120	2021
Bonga Southwest Aparo	Shell	Crude oil	Offshore deepwater	150	2022
Preowei	Total	Crude oil	Offshore deepwater	50	2023
Owowo	ExxonMobil	Crude oil	Offshore deepwater	160	2024

Sources: U.S. Energy Information Administration and company websites, Newsbase, www.offshore-technology.com, www.upstreamonline.com

Refining and refined oil products

- Nigeria relies on imports of petroleum products to meet domestic demand, importing about 442,000 b/d of petroleum products in 2018.¹⁴
- The country has three major crude oil refineries (Port Harcourt I and II, Warri, and Kaduna) and has a total crude oil distillation capacity of 423,750 b/d, according to the *Oil & Gas Journal*.¹⁵ All three refineries are run by the state-owned national oil company

(NOC), NNPC. These refineries persistently operate at far lower than full capacity because of operational failures, fires, and sabotage, mainly on the crude oil pipelines feeding the refineries. NNPC has begun rehabilitation work at its refineries, and the NNPC's latest reports indicate that the refineries have been shuttered. The rehabilitation work is expected to be completed by 2022, although how much throughput the refineries will have after rehabilitation is unclear. NNPC stated in April 2020 that it will no longer run the refineries after rehabilitation and is reportedly seeking a private sector company to manage operations at the refineries.¹⁶

- A small, privately owned refinery located in Ogbele, Ahoada, in the Rivers state expanded its refining capacity to 6,000 b/d in January 2020. The expansions completed at the refinery will allow it to produce and market other fuels such as heavy residual fuel oil, marine diesel, and kerosene. Previously, diesel was the only petroleum product the refinery could produce. The refinery is owned by Niger Delta Petroleum Resources (NPDR), a subsidiary of Niger Delta Exploration and Production; NPDR plans to further increase the refinery's capacity to 11,000 b/d in the future, although they have not released any concrete dates.¹⁷
- Nigeria has a gas-to-liquids (GTL) plant at Escravos with a nameplate capacity of 33,000 b/d that started production in mid-2014, about a decade behind schedule. The Escravos GTL plant is operated by Chevron (75%) in partnership with NNPC (25%). The Escravos GTL plant can convert about 475 million cubic feet per day (MMcf/d) of natural gas into diesel, liquefied petroleum gas (LPG), and naphtha products, primarily for export.¹⁸
- The Dangote Group, a Nigerian conglomerate, is constructing an integrated refining and petrochemical complex in the Lekki Free Trade Zone east of Lagos, Nigeria's most populous city. The Dangote Group expects the refinery to come online by 2021, although the refinery is not likely to be completed on time.¹⁹ According to the *Oil & Gas Journal*, the refining and petrochemical complex will have a 650,000 b/d crude oil distillation unit (making it the world's largest single-train refinery), a 3.6 million ton per year polypropylene plant, a 3.0 million ton per year urea plant, and natural gas processing installations to feed in natural gas.²⁰ Once completed, it will be the largest refinery in Africa and is expected to significantly affect domestic and regional crude oil and petroleum products markets.

Table 2. Refineries in Nigeria

Refinery name	Location	Status	Nameplate capacity (barrels per day)
Kaduna	Kaduna	Under maintenance	104,500
Port Harcourt 1 and 2	Rivers	Under maintenance	199,500
Warri	Delta	Under maintenance	118,750
Ogbele	Rivers	Active	6,000
Total			428,750

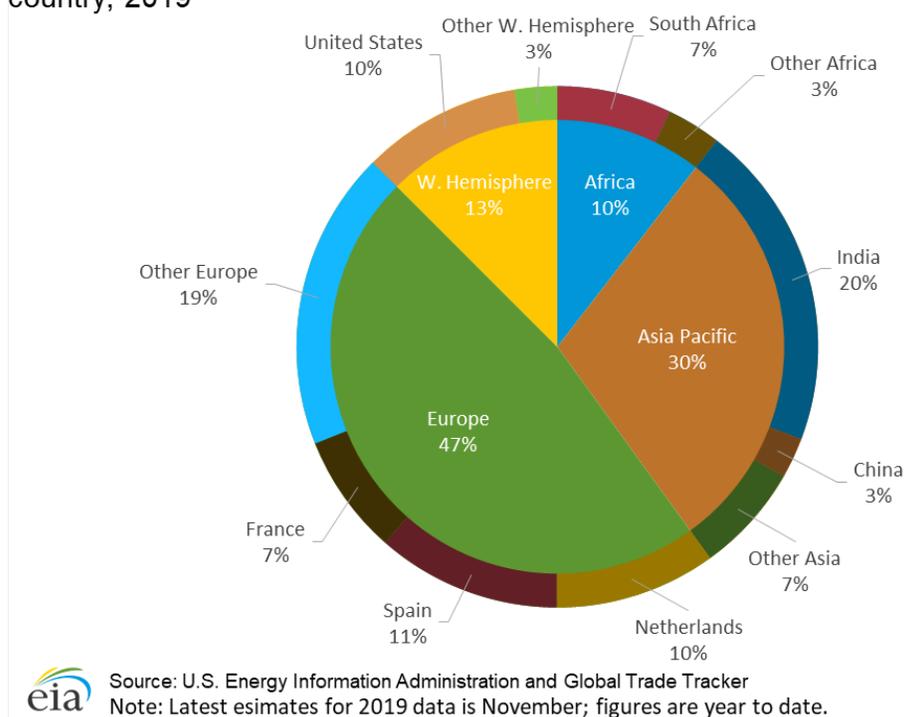
Source: *Oil & Gas Journal Worldwide Refining Survey, January 2020*.

Note: Figures in this table are based on the *Oil & Gas Journal's* latest estimate, but other sources have indicated that Ogbele has upgraded its capacity to 6,000 b/d.

Petroleum and other liquids exports

- According to the latest estimates by Global Trade Tracker, Nigeria exported about 2.08 million b/d of crude oil and condensate in 2019. India was the largest importer of Nigeria's crude oil and condensate, purchasing about 420,000 b/d in 2019. Spain and the Netherlands were the next largest importers of Nigeria's crude oil and condensate, each importing about 238,000 and 208,000 b/d in 2019, respectively. The United States was the fourth-largest importing country of Nigeria's crude oil and condensate in 2019. Europe continued to be the largest importer by region, importing nearly 1 million b/d²¹ (Figure 2).

Figure 2. Total crude oil and condensate exports from Nigeria by region and country, 2019



Natural gas

Exploration and production

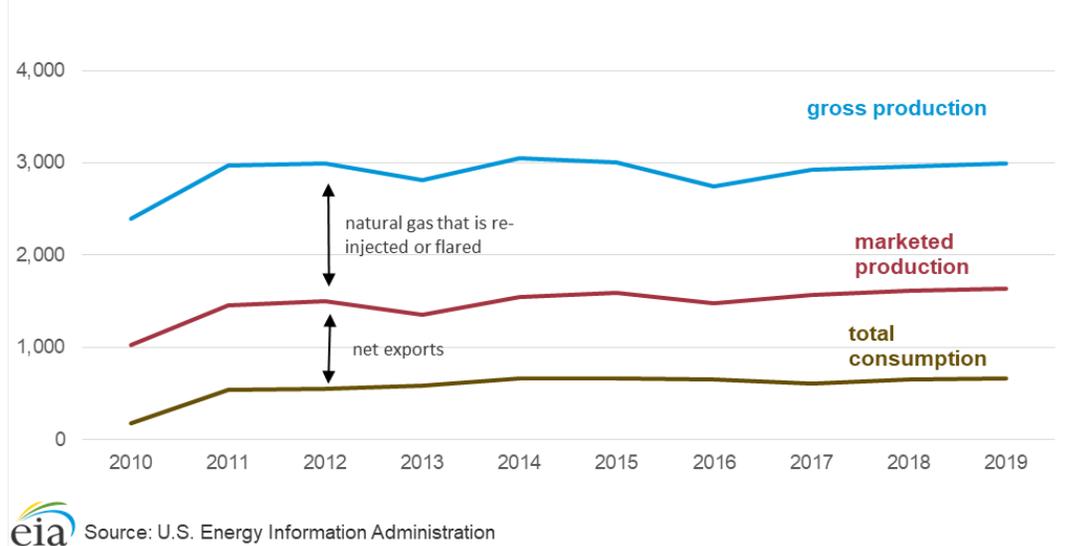
- Nigeria had an estimated 200.4 trillion cubic feet (Tcf) of proved natural gas reserves by the end of 2019, according to the *Oil & Gas Journal*. Nigeria has the largest natural gas reserves in Africa.²²
- According to the latest estimates by EIA, Nigeria produced 1.6 Tcf of dry natural gas (or marketed natural gas production) in 2019.²³ Nigeria's natural gas industry is also affected by the same security and regulatory issues that affect the crude oil industry.
- A significant amount of Nigeria's gross natural gas production is either re-injected or flared. Some of Nigeria's oil fields lack the infrastructure to capture the natural gas produced with oil, known as associated gas. According to the most recent data by the World Bank's Global Gas Flaring Reduction Partnership (GGFR), Nigeria flared about

261 billion cubic feet (Bcf) of natural gas in 2018, making Nigeria the seventh-largest natural gas flaring country in terms of annual natural gas flaring volume.²⁴

- In December 2019, Nigeria LNG (NLNG) reached financial close, or its final investment decision, to add a seventh train to its existing facility, adding about 365 Bcf, thus increasing the total capacity of the facility to 1.4 Tcf. The expansion project was initially proposed in 2005 but encountered numerous delays. NLNG expects the project to be completed by 2024, and it will be operated by Shell (25.6%), and the other shareholders are NNPC (49%), Total (15%), and Eni (10.4%)²⁵ (Figure 3).

Figure 3. Annual natural gas production and consumption in Nigeria

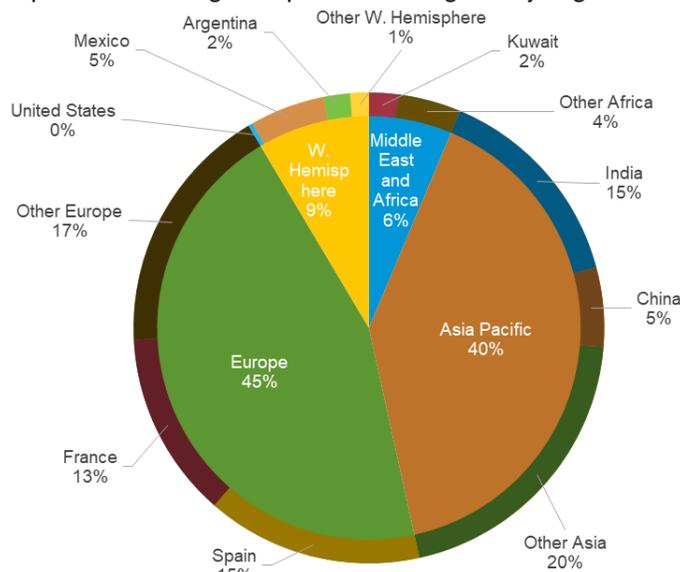
billion cubic feet



Natural gas exports

- Nigeria exports natural gas primarily as LNG. Both infrastructure and demand constraints are challenges to exporting primarily by pipeline to neighboring countries. Nigeria began exporting LNG in 1999 when the first two trains at the Bonny Island facility were completed.²⁶
- According to the latest estimates in BP's *2019 Statistical Review of World Energy*, Nigeria exported about 982 Bcf of LNG in 2018, ranking Nigeria as the world's fifth-largest LNG exporter, behind Qatar, Australia, Malaysia, and the United States. Nigeria's LNG exports accounted for about 6.5% of LNG traded globally. Spain was the largest importer of Nigeria's LNG in 2018, importing about 146 Bcf of Nigeria's LNG, followed by India (143 Bcf), and France (126 Bcf)²⁷ (Figure 4).

Figure 4. Total liquefied natural gas exports from Nigeria by region and country, 2018

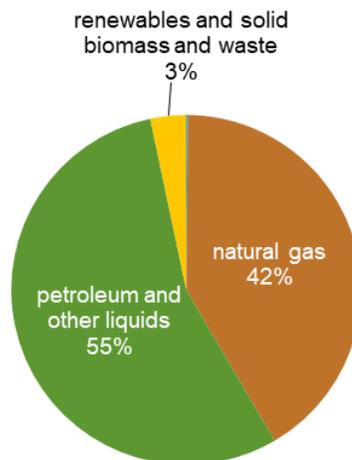


Source: BP 2019 Statistical Review of World Energy
 Note: Percentages are estimates as a result of rounding

Energy consumption

- According to EIA's latest estimates, total primary energy consumption in Nigeria was about 1.5 quadrillion British thermal units in 2017. Most primary energy consumption in the country was derived from natural gas, petroleum, and other liquids (97%). Traditional biomass and waste (typically consisting of wood, charcoal, manure, and crop residues used for power generation), coal, and renewables accounted for only a marginal amount of consumption (3%) in 2017.²⁸

Figure 5. Primary energy consumption in Nigeria, 2017

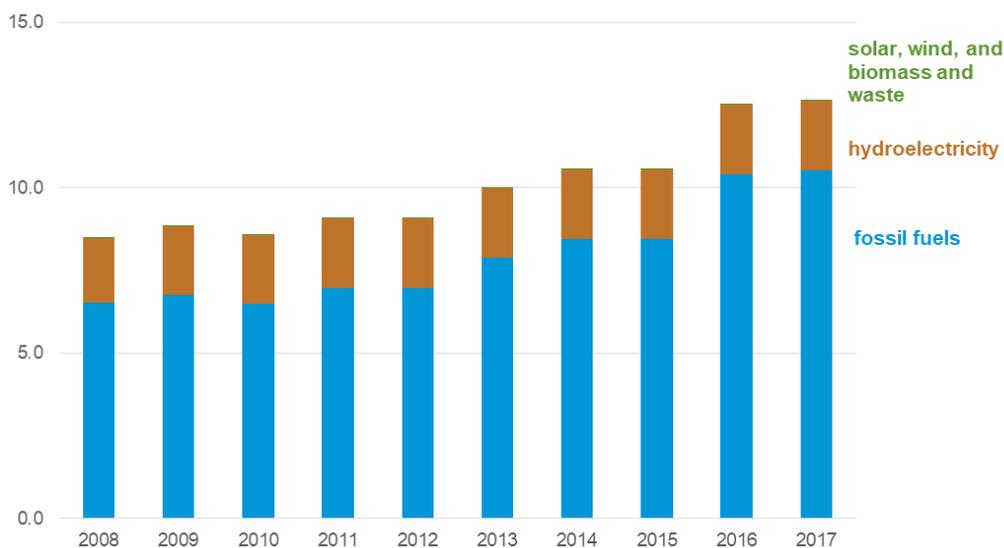


Source: U.S. Energy Information Administration

Electricity

- Nigeria's generation capacity was 12,664 megawatts (MW) in 2017, of which 10,522 MW (83%) was from fossil fuels; 2,110 MW (17%) was from hydroelectricity; and 32 MW (<1%) was from solar, wind, and biomass and waste. Net electricity generation was far lower than capacity and was 30.6 billion kilowatthours (3,495 MW) in 2017, or about 28% of total capacity.²⁹
- Although Nigeria is the continent's largest economy, only 60% of the population had access to electricity in 2018, according to the latest estimates by the International Energy Agency. Most of Nigeria's fossil fuel-derived electricity generation is from natural gas, and crude oil is mainly used for backup power generation. Nigeria's power sector suffers from poor maintenance of electricity facilities, natural gas supply shortages, and an inadequate transmission and distribution network.³⁰

Figure 6. Nigeria's electricity capacity by fuel type, 2008–2017
gigawatts



 Source: U.S. Energy Information Administration

Renewable Energy Sources

- Nigeria has set ambitious goals to increase renewable power generation capacity. The Nigerian government has approved the contract to develop the 3.01 GW Mambilla hydropower plant located in the Taraba state. The Exim Bank of China will provide 85% of the required financing to develop the project, and the contract to construct the facility was awarded in November 2017 to a consortium of three Chinese companies, including the Gezhouba Group.³¹ Other significant hydropower projects that are currently in development or construction include the 700 MW Zungeru hydropower project and the 40 MW Kashimbila hydropower project, which are currently under construction, and the rehabilitation of the 578 MW Jebba hydropower project and the 548 MW Kainji hydropower project. These projects are reportedly due to come online in the next two to three years, but whether the completion dates will be postponed because of project delays is still unclear.³²

- Government support and investor interest in solar power projects have been growing in the past few years in Nigeria, partially as a way to mitigate natural gas supply shortages and to increase access to electricity in remote and rural areas. The Nigerian government, the Rural Electrification Agency, and the World Bank-funded Nigeria Electrification Project are jointly funding a \$75 million grant to encourage off-grid solar investments to reduce kerosene and diesel use for lighting and backup power generation.³³ In July 2016, Nigeria signed power purchase agreements with 14 utility-scale solar photovoltaic facilities that have a total generation capacity of 1.1 GW, although none of these projects has yet reached financial close, and reportedly the independent power producers and the Nigerian government have a dispute regarding tariff pricing.³⁴

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 June 25, 2020.
- Data are EIA estimates unless otherwise noted.

¹ [BP 2019 Statistical Review of World Energy](#), June 2019.

² International Monetary Fund, [2019 Article IV Consultation, IMF Country Report no. 19/92](#).

³ International Monetary Fund, [2019 Article IV Consultation, IMF Country Report no. 19/92](#).

⁴ Josh Holland. "Petroleum Industry Governance Bill veto sets back Nigeria's oil reform efforts," IHS Markit, September 3, 2018. "[Uncertainty over PIB's fate as another decade ends](#)," [punchng.com](#), December 26, 2019. "Nigeria Takes Another Shot at Oil Industry Reform," Energy Intelligence Group, February 28, 2020.

⁵ "[Nigeria: Tax provisions in Finance Act, 2020](#)," KMPG, January 16, 2020.

⁶ "[A New Regime for Nigerian Upstream Royalty Rates](#)," *The National Law Review*, November 11, 2019. "[Nigeria raises deepwater royalties](#)," *Oil Review Africa*, November 6, 2019. Josh Holland, "Nigeria confounds hydrocarbon investors with abrupt deepwater royalty increase," IHS Markit, November 18, 2019.

⁷ 2019 Worldwide Reserves Survey (Table), *Oil & Gas Journal*, January 2020.

⁸ Ruxandra Iordache, "[OPEC output dipped in December ahead of deeper cuts](#)," Argus Media, January 9, 2020. Brian Wingfield, et al., "[OPEC Deepened Oil Cuts Ahead of New Pact](#)," Bloomberg Business, January 21, 2020.

⁹ "[The 9th \(Extraordinary\) OPEC and non-OPEC Ministerial Meeting concludes](#)," Organization of Petroleum Exporting Countries, Press Release, April 9, 2020.

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¹¹ "Total Starts Eginia Output in Nigeria," Energy Intelligence Group, January 3, 2019. "[Crude oils have different quality characteristics](#)," U.S. Energy Information Administration, *Today in Energy*, July 16, 2012.

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¹³ "[What is the state of play for African oil & gas licensing rounds?](#)" *Africa Oil Week*, January 14, 2020, accessed 2/26/2020. Anine Kilian, "[Nigeria to Launch Oil Licensing Round in 2020](#)," *Africa Oil & Power*, November 21, 2019.

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- ¹⁸ [Chevron Nigeria Business Portfolio](#), accessed 1/22/2020. [Escravos Gas-to-Liquids Project, Niger Delta, www.hydrocarbons-technology.com](#), accessed 1/22/2020.
- ¹⁹ Bloomberg Business, "[Dangote Says Nigeria Lagos Refinery to start by mid- 2018](#)," November 17, 2014. Reuters, "[Update 1-Nigeria's Dangote group expects \\$9bn refinery to start by 2017](#)," March 17, 2015.
- ²⁰ Robert Brelsford. "[Nigeria lets contract to establish four condensate refineries](#)," *Oil & Gas Journal*, December 19, 2019.
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- ²² 2019 Worldwide Reserves Survey (Table), *Oil & Gas Journal*, January 2020.
- ²³ U.S. Energy Information Administration, [International Energy Statistics database](#), accessed 2/5/2020.
- ²⁴ The World Bank Group, [Global Gas Flaring Reduction Partnership](#), accessed 1/21/2020.
- ²⁵ Kelli Malackar Krasity and Josh Holland, "Nigeria LNG expansion FID: Finally the right time," *IHS Markit LNG Insight*, January 2, 2020.
- ²⁶ Liquefaction Project Profile – Nigeria: Nigeria LNG (NLNG), IHS Markit, August 30, 2018.
- ²⁷ [BP 2019 Statistical Review of World Energy](#), June 2019.
- ²⁸ U.S. Energy Information Administration, [International Energy Statistics database](#), accessed 2/5/2020.
- ²⁹ U.S. Energy Information Administration, [International Energy Statistics database](#), accessed 2/5/2020.
- ³⁰ International Energy Agency, [Country Profile: Nigeria Energy Outlook 2019](#), *Africa Energy Outlook 2019*, November 2019.
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- ³² [Jebba Hydro Power Plant History](#), Mainstream Energy Solutions Limited, accessed 2/21/2020. Fidelis John, "[Nigeria endorses US \\$32m Jebba hydropower plant turbine rehab project](#)," *Construction Review Online*, February 20, 2020. [Zungeru Hydropower Project](#), power-technology.com, accessed 2/21/2020. Teresa Njoroge, "[Construction of Kashimbila Multipurpose Dam in Nigeria 90% complete](#)," *Construction Review Online*, September 16, 2019.
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