



Independent Statistics & Analysis

U.S. Energy Information
Administration

Country Analysis Executive Summary: Iraq

Last Updated: February 24, 2021

Overview

- Iraq (defined as Federal Iraq and Kurdistan Regional Government) is the second-largest crude oil producer in the Organization of the Petroleum Exporting Countries (OPEC) after [Saudi Arabia](#). It holds the world's fifth-largest proved crude oil reserves at 145 billion barrels, representing 17% of proved reserves in the Middle East and 8% of global reserves.¹ Most of Iraq's major known fields—all of which are located onshore—are producing or are in development.
- Iraq's crude oil production grew by about 300,000 barrels per day (b/d) from 2013 through 2019, and it averaged 4.7 million b/d in 2019. During the first half of 2020, Iraqi crude oil output averaged about 4.4 million b/d. Iraq voluntarily reduced crude oil output in the second quarter of 2020 to comply with the [OPEC+ Agreement](#). These production estimates include crude oil produced in the semi-autonomous northeast region in Iraq governed by the Kurdistan Regional Government (KRG).
- Iraq's economy depends heavily on crude oil export revenues. In 2018, crude oil export revenue accounted for an estimated 91% of Iraq's total government revenues, according to the International Monetary Fund (IMF).² In 2019, Iraq earned \$87 billion in net crude oil export revenue, almost \$6 billion less than in 2018, as a result of lower oil prices and only slightly higher export volumes.³ EIA expects the oil price declines in 2020 and Iraq's lower crude oil production following the OPEC+ agreement in April 2020 will significantly reduce Iraq's revenues further and potentially further strain Iraq's economy.⁴

Kurdistan Regional Government and Federal Iraq

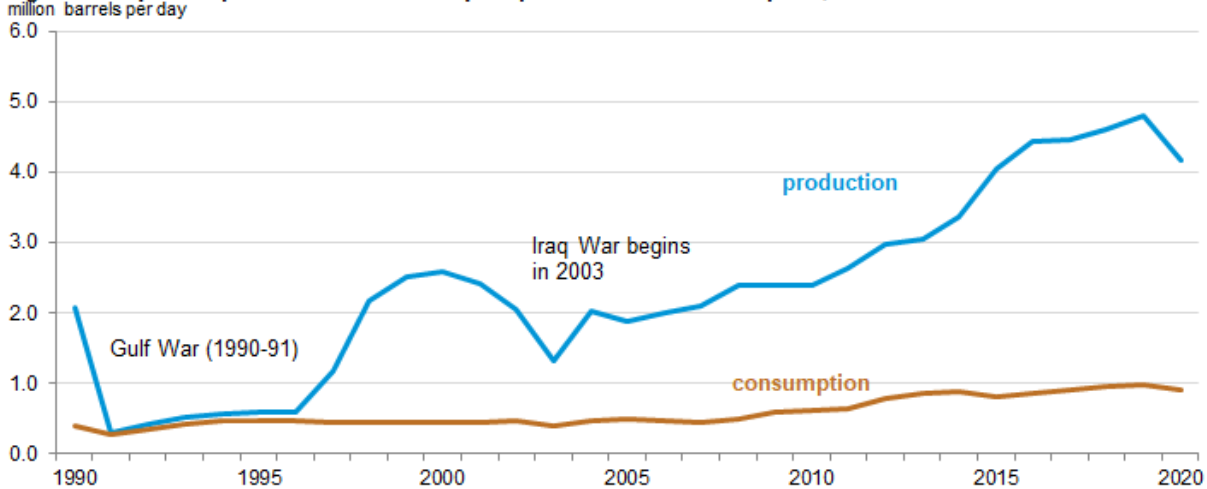
- Federal Iraq is defined as the central government of Iraq in Baghdad. KRG, the official ruling body of the semi-autonomous region in northern Iraq that is predominantly Kurdish, has been involved in disputes with the central government related to sovereignty. The KRG held a non-binding independence referendum on September 25, 2017, which more than 90% of voters approved.
- In October 2017, following the referendum, Iraq's central government forces took over some oil fields in the Kirkuk area, along with other vital infrastructure such as border crossings and airports. Subsequently, Federal Iraq's North Oil Company (NOC) took over operations of the Avana Dome, Baba Dome, and Bai Hassan oil fields. The NOC continues to operate the Baba, Jambur, and Khabbaz oil fields located near Kirkuk.

- By the end of October 2017, northern Iraq production (including production from both the KRG and from Federal Iraq) had decreased to about half of the pre-referendum volume of nearly 600,000 b/d. Northern Iraq production has mostly returned to pre-referendum levels during the past few years because small oil firms increased production at existing fields and brought on several small fields in the KRG-controlled area.⁵
- Control over rights to the reserves is a source of considerable controversy between the ethnic Kurds and other groups in the area. According to Rystad estimates, as of October 2020, the KRG-controlled areas held almost 3 billion barrels of resources.⁶ The KRG estimate of 45 billion barrels is likely higher because they include both unproven reserves and the disputed Kirkuk area fields.⁷

Petroleum and other liquids

- Iraq's crude oil production (excluding condensates) averaged 4.7 million barrels per day (b/d) in 2019, which was 100,000 b/d more than the 2018 production level (Figure 1). More than 4.2 million b/d was produced under the central government in Baghdad, and about 450,000 b/d was produced at the northern fields currently operated by the KRG (the Baba, Jambur, and Khabbaz oil fields).⁸ Basra Light is Iraq's largest crude oil stream, accounting for about 3.1 million b/d of total Iraqi production.⁹
- Iraq is a party to the OPEC+ agreement to manage crude oil production. Under the April 2020 agreement, Iraq agreed to reduce production to 3.6 million b/d for the May–July 2020 period and to 3.8 million b/d for the remainder of 2020. In addition, Iraq agreed to lower production even further to compensate for any months that it produced more than the lower production targets. Although Iraq was not able to meet these targets for several months, its average crude oil production for August through December 2020 dropped substantially and was slightly higher than 3.8 million b/d. Crude oil production for all of 2020 averaged 4.1 million b/d.
- Iraq consumed 909,000 b/d of petroleum and other liquids in 2020. Liquids consumption in Iraq has grown by an average 4% per year during the past decade. Domestic refineries meet most of Iraq's petroleum consumption needs. However, Iraq relies on imports of some petroleum products, primarily gasoline.¹⁰ Iraq also uses crude oil for electric power generation, although crude oil used for direct burn declined to about 28,000 b/d in 2019, down from 169,000 b/d in 2016.¹¹

Figure 1. Iraq's total petroleum and other liquids production and consumption, 1990-2020



Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, January 2021

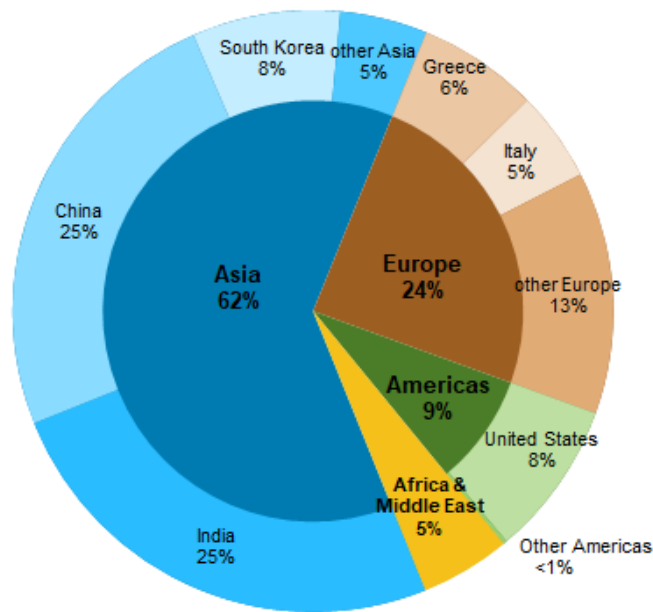
Crude oil exports

- Total Iraqi seaborne-traded crude oil exports averaged nearly 4 million b/d in 2019, which was slightly higher than the previous year, based on tanker loadings published by Clipper Data.¹² During 2019, approximately 88% of Iraq's seaborne exports were shipped from the southern terminals in the Persian Gulf, which exports Basra light and heavy crude oil grades (Figure 3). Crude oil from Iraq's northern region is sent by pipeline to Ceyhan, Turkey, where it ships from the port of Ceyhan.
- Asia (led by [India](#), [China](#), and [South Korea](#)) was the main regional destination for Iraq's crude oil, importing 62% of Iraq's crude oil exports in 2019 (Figure 2). China and India each imported almost 1 million b/d of crude oil from Iraq (nearly half of Iraq's total exports), making them the top buyers of Iraq's crude oil during the year. Outside of Asia, the United States imported the most crude oil from Iraq at 331,000 b/d (8% of Iraq's total exports). U.S. crude oil imports increased year over year in 2017 by more than 180,000 b/d, mainly to partly offset declining U.S. crude oil imports from Venezuela. However, Iraq's oil exports to the United States declined in 2018 and 2019 because of higher U.S. crude oil production and higher U.S. imports from heavy oil sands in Canada. Collectively, European countries imported 24% of Iraq's crude oil exports.
- In addition to its seaborne shipments, Iraq also exports relatively small volumes of crude oil by truck to Jordan and by inland routes to Turkey via an onshore pipeline from the Ceyhan terminal to Turkey's Kırıkkale refinery, near Ankara. The Ceyhan-Kırıkkale pipeline has a capacity of 145,000 b/d.¹³
- Federal Iraq has considered various options to expand its northern export capacity that can bypass the KRG pipeline, an issue that has become even more urgent since KRG's independence referendum and subsequent crude oil production disruptions in the north. To expand transportation capacity, which allows Federal Iraq to release some of the northern output that was previously shut in, Federal Iraq repaired the pipeline that connects the Kirkuk fields to the

Baiji refinery and brought back online the refinery’s first unit in mid-2018 and the second unit in January 2021. Iraq’s oil ministry expects to restore the other Baiji units by 2023, although budget constraints could further delay this process.¹⁴ The Kirkuk fields also serve small local refineries in Kurdistan and northern Iraq.

- Another outlet that Iraq established temporarily for its northern crude oil was a swap deal with Iran, an agreement struck in 2017. Iraq trucked about 30,000 b/d of crude oil from its Kirkuk fields to Iran, and Iran shipped the equivalent volume of crude oil from the Kharg terminal to Basra. However, this arrangement ended by November 2018, when U.S. sanctions took effect on Iran.¹⁵
- The Federal Iraq government and the KRG signed an agreement in November 2018 that allows Iraq to transport up to 100,000 b/d of crude oil through the KRG’s pipeline to Turkey and to export its crude oil from the Kirkuk fields through the Ceyhan port.¹⁶ Iraq exported more than 90,000 b/d of crude oil from Kirkuk through the KRG pipeline in 2019.¹⁷

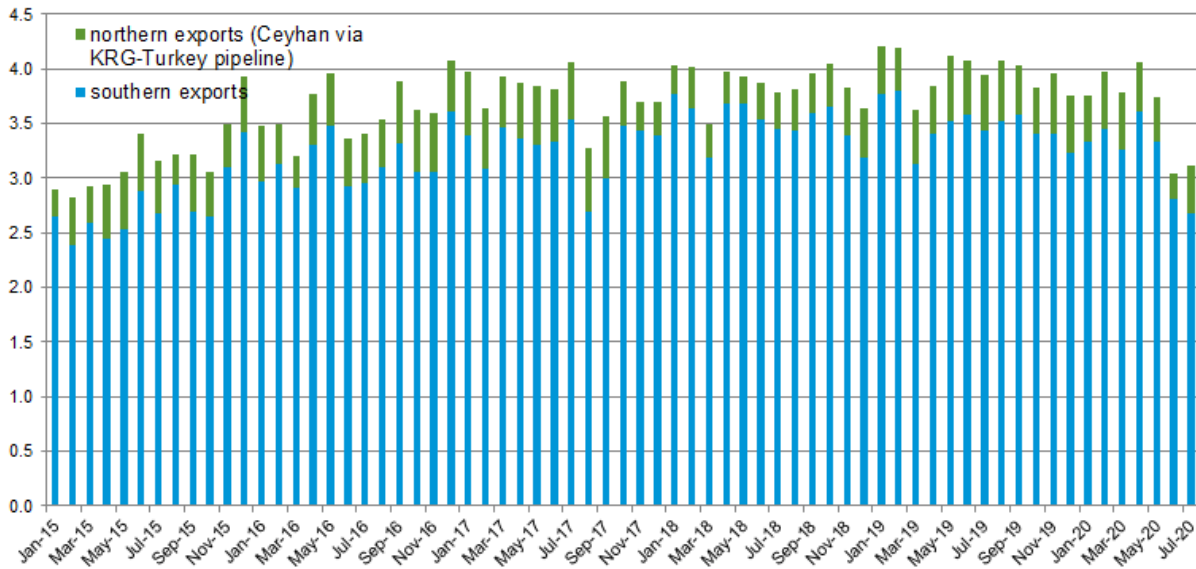
Figure 2. Iraq's seaborne crude oil exports in 2019, by destination



Source: U.S. Energy Information Administration based on ClipperData
 Note: Total crude oil exports were 4.0 million b/d in 2019. Exports only include seaborne-traded crude oil, not crude oil exported by truck or crude oil exported onshore to Turkey via the Ceyhan-Kirikkale pipeline to a refinery near Ankara. Totals may not equal the sum of components because of independent rounding.

Figure 3. Iraq's monthly seaborne crude oil exports, by location, January 2015-July 2020

million barrels per day



Sources: U.S. Energy Information Administration based on ClipperData
 Note: Exports only include seaborne-traded crude oil, not crude oil transported by trucks or onshore pipelines. KRG=Kurdistan Regional Government

Natural gas

- At nearly 132 trillion cubic feet (Tcf), Iraq's proved natural gas reserves at the end of 2020 were the 12th largest in the world.¹⁸ About three-quarters of Iraq's natural gas reserves are associated with oil, and most of this associated natural gas is in the supergiant fields in the south.¹⁹
- Iraq's dry natural gas production was 378 billion cubic feet (Bcf) in 2019. Iraq consumed 636 Bcf of dry natural gas in 2019, much of which the electricity sector consumed.
- According to the World Bank, Iraq [flared](#) 632 Bcf of natural gas in 2019, ranking as the second-largest source country of flared natural gas in the world behind Russia.²⁰ Natural gas is flared because of insufficient pipeline capacity and other midstream infrastructure to move the natural gas from production areas.
- Iraq pushed back its target to eliminate natural gas flaring to 2025.²¹ Iraq is pursuing several projects to capture more of its associated natural gas and is negotiating agreements with U.S. firm Honeywell UOP, among others, for natural gas capture and processing, power generation, and development of the Ratawi oil field in Basra.²²
- Iraq is also interested in developing its non-associated natural gas fields. At the conclusion of the fifth licensing round, Iraq awarded two blocks in the Diyala Province to Crescent Petroleum. Iraq aims to increase natural gas production by 750 million cubic feet per day (MMcf/d) from these blocks within three years.²³ Iraq is also interested in continuing to develop the 5.6 Tcf Akkas

natural gas field, one of the few non-associated natural gas fields in Iraq. KOGAS halted development in 2014 when ISIS militants moved into the area.²⁴

- Iraq began importing natural gas from Iran in June 2017 to fuel electric power plants near Baghdad, including the Al-Besmaya, Al-Quds, Al-Mansuriyah, and Al-Sadr stations. Annual natural gas imports averaged 857 MMcf/d in 2019 and averaged 772 MMcf/d for the first half of 2020.²⁵
- Talks have begun between the Federal Government of Iraq and the KRG to supply natural gas from Kurdish fields to power plants in northern Iraq. This agreement would provide another option for the KRG, which has also considered exporting its natural gas to Turkey. However, these plans have stalled.²⁶

Electricity

- Iraq's net electricity generation grew by an annual average of about 8% each year between 2008 and 2018, reaching an estimated 78 billion kilowatthours (kWh) (Figure 4). Nearly all (more than 97%) of Iraq's electricity generation is from oil and natural gas. According to the International Energy Agency, natural gas use in the power sector increased from less than 30% in 2016 to about 50% in 2018 because Iraq began importing natural gas from Iran to bolster its own supplies. Hydroelectricity accounts for the remaining share of electricity production, but its share has declined during the past decade.²⁷
- Federal Iraq's available peak electricity generation capacity was 19.3 gigawatts (GW) for 2019. The available capacity in 2019 was much lower than the installed capacity of 33 GW at the end of 2018, as well as the 27.5 GW needed to meet peak summer demand.²⁸ Iraq's electricity use is very seasonal and reaches peak capacity in the summer months. Generation plants run at low utilization rates, and the available or effective production capacity is much lower than installed capacity because of poor transmission infrastructure, inefficient or damaged power plants, and to a lesser extent, Iraq's insufficient natural gas infrastructure.
- Peak summer demand typically exceeds actual generation, resulting in power shortages that have sparked protests, particularly in southern Iraq. In the summer of 2020, Iraq arranged with oil companies to re-route power from oil projects to help offset shortages.²⁹
- Distribution losses remain an issue in Iraq. From 2008 to 2018, distribution losses averaged 52% of total electricity supply.³⁰ High distribution losses are the result of inefficiencies on the grid, poor system design, and high electricity theft.
- Iraq burns crude oil directly at power plants to make up for its limited feedstock of other power generation fuels. At its peak, direct use of crude oil reached more than 220,000 b/d in the summer of 2015 (Figure 5).³¹ Reported average crude oil used at power stations fell from an average of 169,000 b/d in 2015 to an average of 28,000 barrels per day (b/d) in 2019 as a result of increased use of natural gas for electric power generation. Although Iraq's official reports of crude oil burn have been low during the past few years, other industry sources report much higher amounts of crude oil used in power production.³²

- Iraq’s electricity sector depends on Iran for much of its supplies. In 2019, about 23% of Iraq’s electricity was generated by natural gas produced in Iran, and Iraq imported about 5% of its electricity from Iran.³³
- Iraq is looking to diversify its sources of imported electricity. Sources under consideration include the Gulf Cooperation Council (GCC), Saudi Arabia, Turkey, and Jordan. Iraq has a signed agreement with the GCC, but the agreement didn’t go into effect in 2020 as planned and could be delayed past the summer of 2021.³⁴ In July 2020, the Federal Government in Iraq signed agreements with Turkey and the KRG to import an additional 650 megawatts (MW) of electricity to help counter power blackouts.³⁵ Iraq and Jordan signed an agreement in September 2020 to construct a transmission line linking the countries and allowing Jordan to export about 114 MW of electricity to Iraq.³⁶

Figure 4. Electricity net generation, imports, and distribution losses in Iraq, 2000-2018

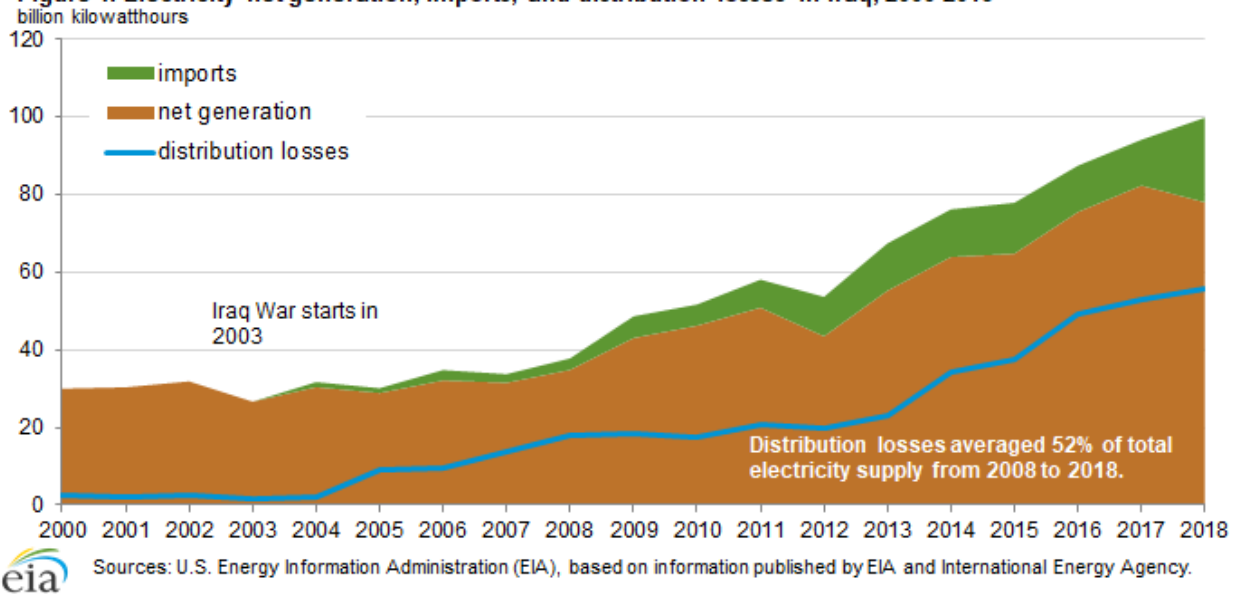
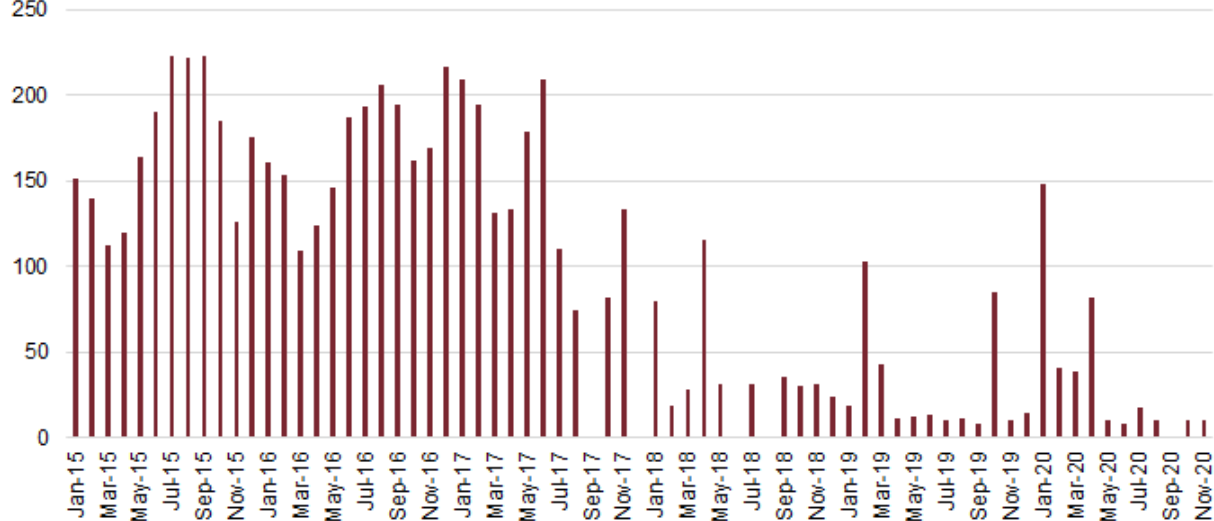


Figure 5. Crude oil used at power stations in Iraq, 2015-2020

thousand barrels per day
250



Source: Joint Oil Data Initiative

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 2021.
- Data are EIA estimates unless otherwise noted.

Endnotes

¹ *Oil & Gas Journal, Worldwide Look at Reserves and Production*, December 7, 2020.

² International Monetary Fund, Article IV Consultation, Iraq 2019, July 2019, Table 2, page 28.

³ U.S. Energy Information Administration, *OPEC Net Oil Export Revenues*, January 13, 2021.

⁴ Al Jazeera, "[Oil price crash compounds problems facing Iraq's new government](#)," May 7, 2020; Middle East Economic Survey, "Iraq's Economy Teeters Despite Q3 Revenue Rebound," October 9, 2020, page 13.

⁵ *Middle East Economic Survey*, "KRG Project Delays Stunt Upstream Growth," August 28, 2020, pages 2-3; *Middle East Economic Survey*, "Iraqi Kurdistan Closes in on 500,000 b/d Oil Production," November 8, 2019, pages 2-3; *Middle East Economic Survey*, "2021: A Year of Challenges and Opportunities for Iraqi Kurdish Oil," January 22, 2021, pages 3-5.

⁶ Rystad Energy database (accessed October 2020).

⁷ Reuters, "[FACTBOX-Oil companies active in Iraqi Kurdistan](#)," January 5, 2011; Kurdistan24 News, "[Dana Gas announces 20-year deal with KRG](#)," March 6, 2019.

⁸ *Middle East Economic Survey*, "KRG Project Delays Stunt Upstream Growth," August 28, 2020, pages 2-3.

⁹ Energy Intelligence, *Crude Profiles and Analytics* (accessed January 2021).

¹⁰ Facts Global Energy, *Middle East Refined Product Balances*, Middle East Oil Databook, Spring 2020.

¹¹ Joint Oil Data Initiative (accessed September 2020).

-
- ¹² U.S. Energy Information Administration based on crude oil liftings and deliveries from Iraq: ClipperData Incorporated (accessed August 2020).
- ¹³ [BOTAS website, Crude Oil](#) (accessed January 2021).
- ¹⁴ Argus Media, [“Refining capacity at Iraq’s Baiji to double in months,”](#) August 30, 2020; *Middle East Economic Survey*, [“Iraq Baiji Refinery Sees Restart of Second CDU,”](#) January 15, 2021, page 13.
- ¹⁵ Reuters, [“Iraq to halt Kirkuk oil exports to Iran, may resume them to Turkey,”](#) October 26, 2018.
- ¹⁶ Argus Media, [“Iraq restarts Kirkuk crude flows through KRG pipeline,”](#) November 16, 2018; Reuters, [“Iraq restarts some Kirkuk oil exports after year-long halt,”](#) November 16, 2018.
- ¹⁷ *Middle East Economic Survey*, [“Baghdad And KRG Sign Preliminary Oil Sharing, Budget Deal,”](#) November 29, 2019, page 8.
- ¹⁸ *Oil & Gas Journal, Worldwide Look at Reserves and Production*, December 7, 2020.
- ¹⁹ International Energy Agency, *World Energy Outlook Special Report: Iraq Energy Outlook*, October 2012, page 70; International Energy Agency, *Iraq’s Energy Sector: A Roadmap to a Brighter Future*, April 2019, page 34.
- ²⁰ World Bank Global Gas Flaring Tracker Report, July 2020, page 5; *Middle East Economic Survey*, [“Global Gas Flaring Gets Worse in 2019,”](#) July 24, 2020, page 3.
- ²¹ *Middle East Economic Survey*, [“Iraq Delays 100% Gas Capture Timeline to 2025,”](#) August 28, 2020, page 11.
- ²² *Iraq Oil Report*, [“Iraq Crude Production and Export Tracker,”](#) August 2020, page 6.
- ²³ *Middle East Economic Survey*, [“Iraq Breaks From The Past In Fifth Bid Round,”](#) January 31, 2020, pages 2-3.
- ²⁴ *Middle East Economic Survey*, [“Saudi Arabia Looks To Expand Iraq Footprint,”](#) May 29, 2020 page 10.
- ²⁵ Facts Global Energy, *Iran Oil and Gas Monthly* July 2020 (July 30, 2020).
- ²⁶ *Middle East Economic Survey*, [“Baghdad-KRG Talks Raise Prospect Of Gas Development Deal,”](#) April 24, 2020, page 2.
- ²⁷ U.S. Energy Information Administration, International Energy Statistics; International Energy Agency, World Energy Statistics 2020.
- ²⁸ U.S. Energy Information Administration, International Energy Statistics; *Middle East Economic Survey*, July 17, 2020, page 13.
- ²⁹ *Iraqi Oil Report*, [“Iraq draws electricity from oil projects to help failing power grid,”](#) July 17, 2020.
- ³⁰ U.S. Energy Information Administration, International Energy Statistics; International Energy Agency, *Electricity Information 2020*.
- ³¹ Joint Oil Data Initiative (accessed August 2020).
- ³² S&P Global Platts conversation (September 2020).
- ³³ FGE *Market Snapshots: Oil and Gas*, August 14, 2020, page 21.
- ³⁴ *Middle East Economic Survey*, May 15, 2020, page 10; *Middle East Economic Survey*, July 31 2020, page 13.
- ³⁵ *Middle East Economic Survey*, July 31, 2020, page 13.
- ³⁶ *Middle East Economic Survey*, October 2, 2020, page 8.