



Country Analysis Brief: Algeria

Last Updated: March 2, 2023

Next update: March 2024

Overview

Map of Algeria



Table 1. Algeria's energy overview, 2021

| | Crude oil and other petroleum liquids | Natural gas | Coal | Nuclear | Hydro | Other renewables | Total |
|---------------------------------------|--|----------------|------|---------|-------|---------------------|-------|
| Primary energy consumption (quad Btu) | 0.8 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.3 |
| Primary energy consumption (%) | 32% | 67% | 1% | 0% | 0% | 0% | 100% |
| Primary energy production (quad Btu) | 2.8 | 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 |
| Primary energy production (%) | 42% | 58% | 0% | 0% | 0% | 0% | 100% |
| Electricity generation (TWh) | | 76.6 | | 0.0 | 0.1 | 0.8 | 77.5 |
| Electricity generation (%) | | 99% | | 0% | 0% | 1% | 100% |

Data source: BP 2022 Statistical Review of World Energy, U.S. EIA International Energy Statistics database

Note: BP data is used for primary energy consumption. Primary energy production and electricity generation data are from EIA's International Energy Statistics database. EIA aggregates crude oil and other petroleum liquids, natural gas, and coal fuel sources as fossil fuel derived fuel sources for electricity generation.

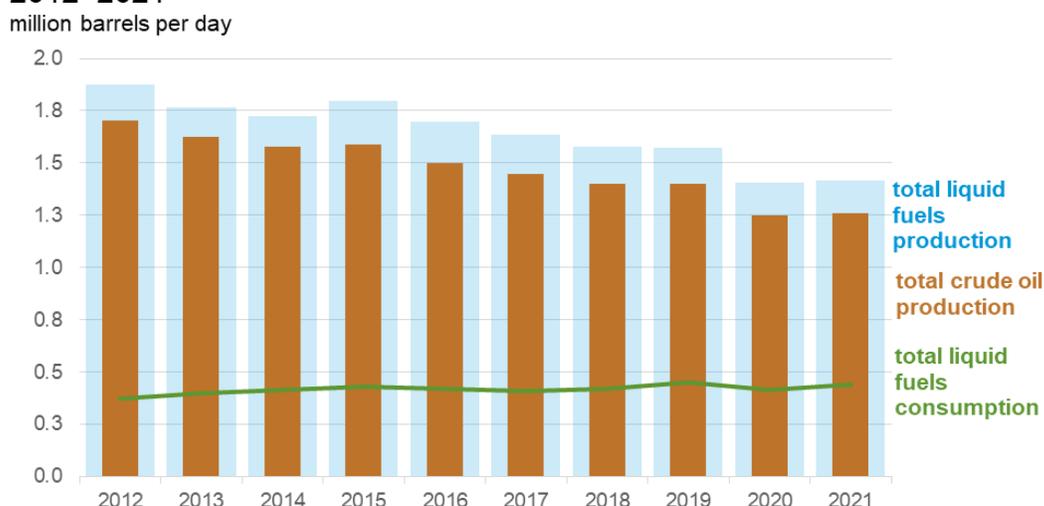
- Algeria is a major crude oil and natural gas producer in Africa and has been a member of the Organization of the Petroleum Exporting Countries (OPEC) since 1969, about 10 years after Algeria first began producing crude oil. Algeria is also a participant in the OPEC+ agreement.
- Algeria imports very little energy as its domestic consumption is met by its own oil and natural gas production, which is heavily subsidized. Natural gas and oil account for almost all of Algeria's total primary energy consumption.
- In the first quarter of 2023, the Algerian government plans to offer at least 10 exploration blocks in an upstream bidding round, its first since 2014.¹

Petroleum and other liquids

- Algeria held an estimated 12.2 billion barrels of proved crude oil reserves at the beginning of 2023.²
- Algeria's oil fields produce high quality, light, sweet crude oil with a very low sulfur content. The country's main crude oil grade is the Sahara blend (API gravity of 46.0° and a sulfur content of 0.10%), which is a blend of crude oils produced at fields in the Hassi Messaoud region.³
- Algeria's largest oil fields are mature. Algeria has struggled to attract new investment in its upstream segment and been unable to prevent production declines (Figure 1).
- In December 2019, the Algerian government introduced a new hydrocarbons law meant to attract international investment in the upstream sector. The law reduces taxes across a number of upstream activities and simplifies the contractual agreement structure and other legal procedures for international investors.⁴
- Sonatrach, Algeria's state-owned oil company, solely owns and operates Algeria's refineries, which were built between 1960's and 1980's. Most recently, the Adrar refinery (2007) and the

condensate splitter at the Skikda refinery (2009) were built.⁵ A number of proposals were made in 2012 to construct new refineries and to expand existing ones, but progress was repeatedly delayed. Eventually construction started on three of the proposed refineries, the Hassi Messaoud, Bishkra, and Tiaret refineries, and they are set to begin commercial operations within the next five years. Sonatrach is planning to upgrade the Skikda refinery by building a fuel cracker and naphtha processing unit to produce gasoline and diesel, but a final investment decision has not yet been reached (Tables 2 and 3).⁶

Figure 1. Total annual liquid fuels production and consumption in Algeria, 2012–2021



Data source: U.S. Energy Information Administration, International Energy Statistics database

Table 2. Refineries in Algeria

| Refinery name | Nameplate capacity (thousand barrels per day) | Status | Ownership and operator |
|---|---|-----------|---|
| Adrar | 13 | Operating | JV between China National Petroleum Company and Sonatrach |
| Algiers (Sidi Rezine) | 77 | Operating | Sonatrach |
| Arzew | 81 | Operating | Sonatrach |
| Hassi Messaoud | 23 | Operating | Sonatrach |
| Skikda I | 355 | Operating | Sonatrach |
| Skikda II (natural gas condensate splitter) | 122 | Operating | JV between China National Petroleum Company and Sonatrach |
| Total | 671 | | |

Data source: *Middle East Economic Survey* as of January 2020, Refining & Petrochemicals

Table 3. Proposed upgrades or expansions of existing refineries or new refineries in Algeria

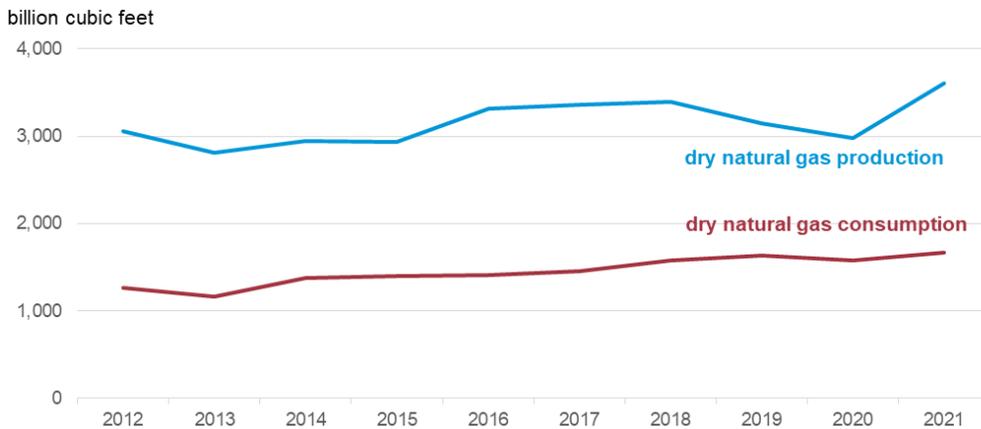
| Refinery name | Target completion date | Notes |
|----------------|------------------------|--|
| Hassi Messaoud | 2024 | When completed, the refinery will have the capacity to produce 5 million tons of oil products and 120,900 tons of natural gas. Planned refinery capacity is about 112,000 barrels per day (b/d). |
| Skikda | NA | This expansion will enable the refinery to produce diesel and gasoline. |
| Tiaret | NA | Initial launch date of 2022 is delayed; final investment decision is not likely until after 2025. Once completed, refinery capacity will be 100,000 b/d. |
| Biskra | NA | Initial launch date of 2022 is delayed; final investment decision is not likely until after 2025. |

Data source: NS Energy Business, Energy Capital & Power, Middle East Economic Survey, government press releases, Africa News, S&P Global Platts

Natural gas

- Algeria held an estimated 159 trillion cubic feet (Tcf) of proved natural gas reserves at the beginning of 2023.⁷
- Dry natural gas production averaged about 3.2 Tcf between 2012 and 2021, while dry natural gas consumption averaged 1.5 Tcf over the same time period. In 2020, natural gas production fell as a result of the impact of the COVID-19 pandemic on economic activity and thus lower crude oil consumption, but it quickly rose again in 2021, reaching a record high of 3.6 Tcf (Figure 2).⁸
- According to the *Middle East Economic Survey*, the increased production in 2021 is attributed to upstream investment that brought online a number of new project startups and expansions, especially at its largest field, Hassi R'Mel, as well as a reduced need for natural gas reinjection at its oil fields as a result of lower crude oil production levels, thus freeing up more natural gas for domestic consumption and export (Table 4).⁹

Figure 2. Total dry annual natural gas production and consumption in Algeria, 2012–2021



eia Data source: U.S. Energy Information Administration, International Energy Statistics database

Table 4. Selected natural gas projects in Algeria

| Project name | Location | Status | Operator and ownership | Estimated startup year |
|--|------------------|-------------------|--|------------------------|
| Touat | Southwest | operating | Neptune (operator) 35%, Engie 30%, Sonatrach 35% | 2019 |
| El Hamra (boosting project) | Illizi Basin | operating | Sonatrach | 2020 |
| North Berkine | Berkine Basin | operating | Eni, Sonatrach | 2020 |
| Menzel Ledjmet SE satellites | Berkine Basin | operating | Sonatrach | 2020 |
| Gassi Touil (peripheral fields) | Berkine Basin | operating | Sonatrach | 2020 |
| Hassi R'Mel (boosting project) | Hassi R'Mel Dome | operating | Sonatrach | 2021 |
| Tinhert phase 1 expansion (Ohanet tie-in) | Illizi Basin | operating | Sonatrach | 2022 |
| Isarene (Ain Tsila) | Illizi Basin | under development | Sunny Hill (operator) 38%, Sonatrach 62% | 2023 |
| Hassi Bahamou/Reg Mouaded (SW Gas Project phase 2) | Southwest | under development | Sonatrach | 2024 |
| Hassi Tidjerane (SW Gas Project phase 2) | Southwest | under development | Sonatrach | 2024 |
| Tinerkouk (SW Gas Project phase 2) | Southwest | under development | Sonatrach | 2024 |
| Touat Phase 2 | Southwest | planned | Neptune (operator) 35%, Engie 30%, Sonatrach 35% | 2026 |
| Timimoun (ramp up project) | Southwest | under development | Total (operator) 38%, Cepsa 11%, Sonatrach 51% | unknown |
| South Berkine | Berkine Basin | under development | Eni 49%, Sonatrach 51% | unknown |
| Tinher phase 2 expansion (Alrar tie-in) | Illizi Basin | under development | Sonatrach | unknown |
| Tin Fouye Tabankort | Illizi Basin | planned | Total 26.4%, Repsol 22.4%, Sonatrach 51% | unknown |
| Tin Fouye Tabankort Sud | Illizi Basin | planned | Total 49%, Sonatrach 51% | unknown |

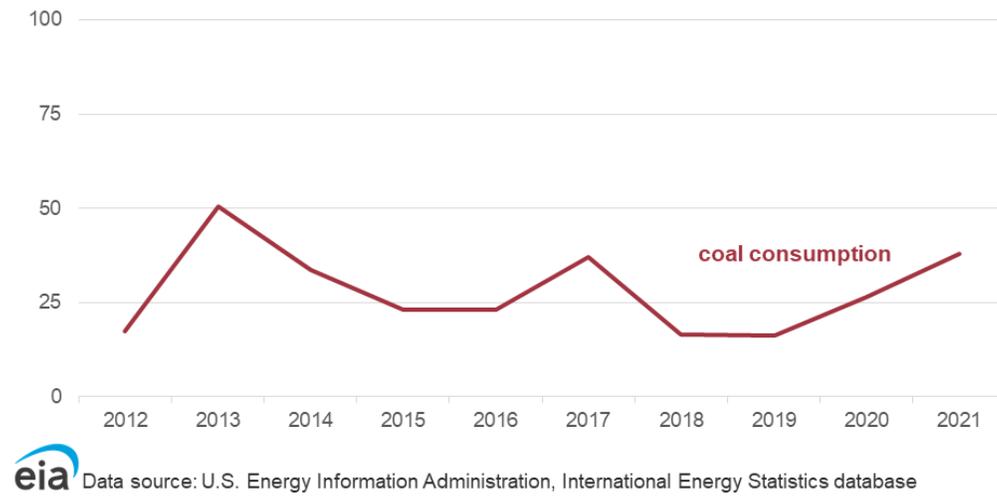
Data source: *Middle East Economic Survey*

Note: boosting projects are development projects that aim to maintain output levels at the El Hamra and Hassi R'Mel fields. Ramp up projects are development projects that aim to increase total output at an existing field

Coal

- Algeria does not hold any reserves of coal and, as a result, produces no coal. Algeria consumes very small amounts of coal, averaging 28,000 short tons per year from 2012 to 2021 (Figure 3).¹⁰

Figure 3. Total coal consumption in Algeria, 2012–2021
thousand short tons



Electricity

- Algeria has renewable energy potential as a result of its geographic features that are conducive to renewable power generation, such as its relatively long coastline on the Mediterranean Sea suitable for wind and desert regions that could provide high levels of solar.¹¹
- Algeria has 13 hydropower plants, mainly located in the northern parts of the country where rainfall is relatively plentiful.¹² Although the share of renewable energy in the generation mix remains limited, it is growing. Algeria’s electric power sector primarily uses fossil fuel-derived sources for generation, comprising about 97% of total power capacity in Algeria (Figures 4 and 5).
- Algeria’s total electricity capacity nearly doubled between 2011 and 2020. Additions of natural gas-fired or combined-cycle natural gas turbine (CCGT) power plants, which generate electricity more efficiently relative to Algeria’s older power plants, propelled most of this growth.¹³ Sonelgaz had planned to bring an additional 4 gigawatts (GW) of CCGT capacity online by the end of 2021, but it only achieved the partial startup of the 1.4 GW Bellara CCGT plant and a 1.2 GW unit at the Naama CCGT plant. Although the growth of electricity capacity was significant, construction of many of the CCGT plants have reportedly faced considerable delays.¹⁴
- The Algerian government’s renewable energy targets call for 15 GW of power capacity at a rate of 1 GW per year by 2035.¹⁵ To achieve these ambitious targets given the relatively short timeframe and low capacity of renewable energy-derived power capacity (of less than 1 GW in 2020), the government seeks to attract foreign investment in power projects. In December 2021, Algeria launched a call for bids to install 1 GW of solar photovoltaic capacity, split into 11 projects ranging in size from 50 megawatts (MW) to 300 MW. However, the deadline to submit bids was postponed, and the estimated project start dates for these contracts, once awarded, is around the end-2023 or early 2024.¹⁶

Figure 4. Algeria's electricity capacity by fuel type, 2011–2020
gigawatts

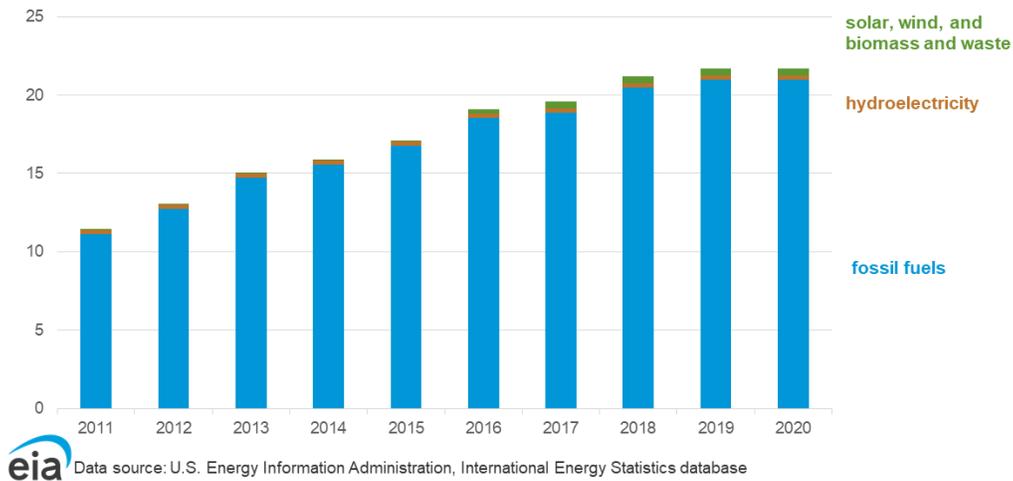
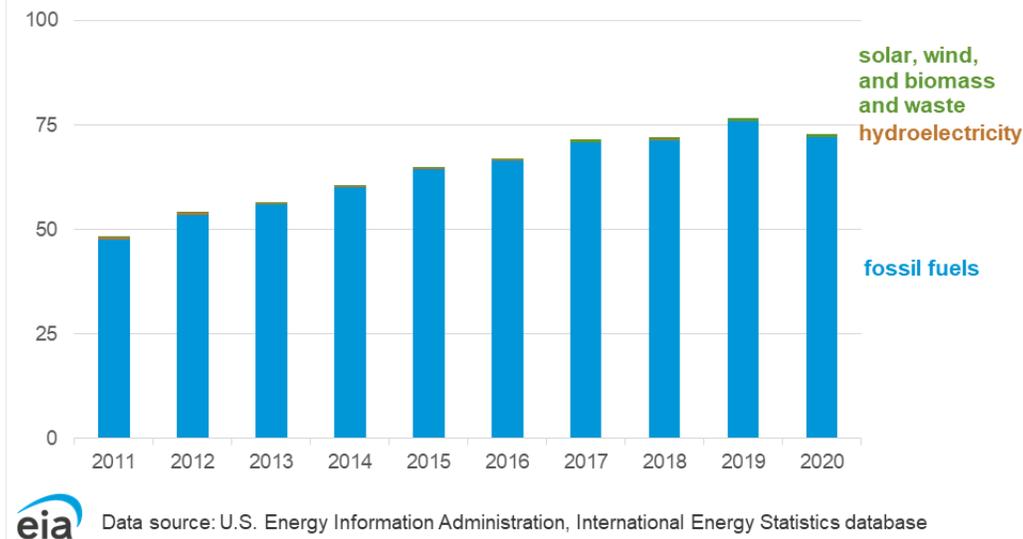


Figure 5. Algeria's net electricity generation by fuel type, 2011–2020
gigawatthours



Energy trade

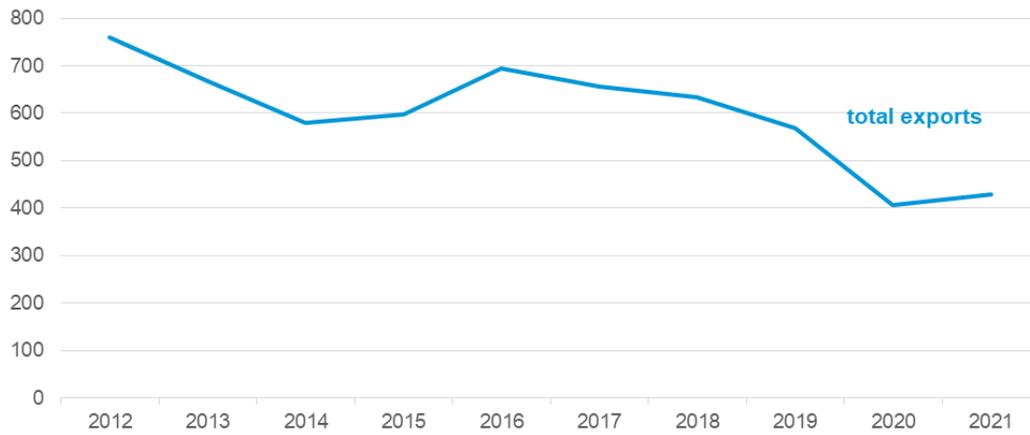
- According to our estimates and Kpler's estimates, Algeria imports virtually no crude oil. Crude oil exports from Algeria averaged about 599,000 barrels per day (b/d) between 2012 and 2021, including a decrease in 2020 because of the COVID-19 pandemic's impact on global petroleum consumption. In 2021, Algeria exported about 428,000 b/d of crude oil and condensate, and a majority of the exports went to Europe (289,000 b/d). France (80,000 b/d) and Spain (49,000 b/d) received most of these exports. Relatively smaller volumes were exported to the Asia-Pacific and Western Hemisphere (Figures 6 and 7).¹⁷
- According to estimates by Kpler, Algeria exported an average of 115,000 b/d of liquefied petroleum gas (LPG) between 2017 and 2021 (Figure 8). Algeria exported butane and propane

from its refineries to Europe and Africa, which were its top two primary regional destinations in 2017–2021. Europe accounted for an average of 76% of total LPG exports, and Africa accounted for an average of 14% over that time period.¹⁸

- Given the abundance of natural gas relative to its domestic needs, Algeria does not import any natural gas, and it exports the natural gas it does not use for domestic consumption. Algeria exported an average of about 1.7 Tcf of natural gas between 2011 and 2020 (Figure 9).¹⁹
- According to BP's 2022 *Statistical Review of World Energy*, Algeria exported about 1.9 Tcf of natural gas in 2021, most of which went to Europe. About 567 billion cubic feet (Bcf) of natural gas was exported as LNG, and the remaining 1.4 Tcf was shipped via pipeline (Figure 10 and Figure 11).²⁰
- Algeria is among the top African LNG exporters and primarily exports its LNG to Europe.²¹ Algeria has four LNG terminals currently in operation, all owned and operated by Sonatrach.²² Between June 2020 and July 2021, the Skikda LNG terminal was shut down as a result of a sudden failure of a turbine control mechanism at the terminal. The incident did not affect LNG deliveries because Sonatrach had spare liquefaction capacity at its other terminals at Arzew.²³ In February 2022, Sonatrach signed a contract with Sinopec to expand and upgrade the Skikda LNG terminal by increasing its storage capacity and modernizing its port facilities to accommodate larger vessels (Table 5).²⁴
- Algeria has three major intercontinental pipelines that export natural gas to Europe: the Enrico Mattei (Transmed) pipeline, the Medgaz pipeline, and the Maghreb-Europe (MEG) pipeline. The capacity of the Medgaz pipeline, which delivers natural gas to Spain, increased from 283 Bcf per year to 378 Bcf per year at the end of 2021 after a third turbo compressor was put into service.²⁵
- Algeria suspended delivery of natural gas exports via the MEG pipeline to Spain in October 2021 as a result of increased political tensions between Algeria and Morocco, which is a destination as well as a transit country for Algeria's natural gas exports.²⁶ However, in June 2022, deliveries of natural gas through the MEG pipeline resumed, albeit in the opposite direction, when Spain began exporting natural gas to Morocco. Spain is reportedly using LNG imports (not from Algeria) sourced on the international market, which are then re-gasified and transported to Morocco.²⁷
- The construction of two major regional pipelines, the Gasdotto-Algeria Sardegna-Italia (GALSI) pipeline and the Trans-Saharan Gas pipeline (TSGP), has been proposed but no final investment decision has been announced. In June 2022, the energy ministers from Niger, Nigeria, and Algeria signed a memorandum of understanding to set up a task force for the Trans-Saharan Gas pipeline that aimed to update the existing feasibility study. If built, the Trans-Saharan Gas pipeline could transport piped natural gas from Nigeria to Algeria's Hassi R'Mel field, where natural gas could be transported to Europe via Algeria's intercontinental pipelines.²⁸ Talks regarding the development of the GALSI pipeline project, which originally aimed to deliver natural gas to Italy, have reportedly restarted, and the pipeline could potentially transport [green hydrogen](#) instead. No concrete plans have been announced (Table 6).²⁹
- Algeria imports all the coal it consumes, nearly all of which was metallurgical coal. Algeria imports small quantities of bituminous coal (Figure 12).³⁰

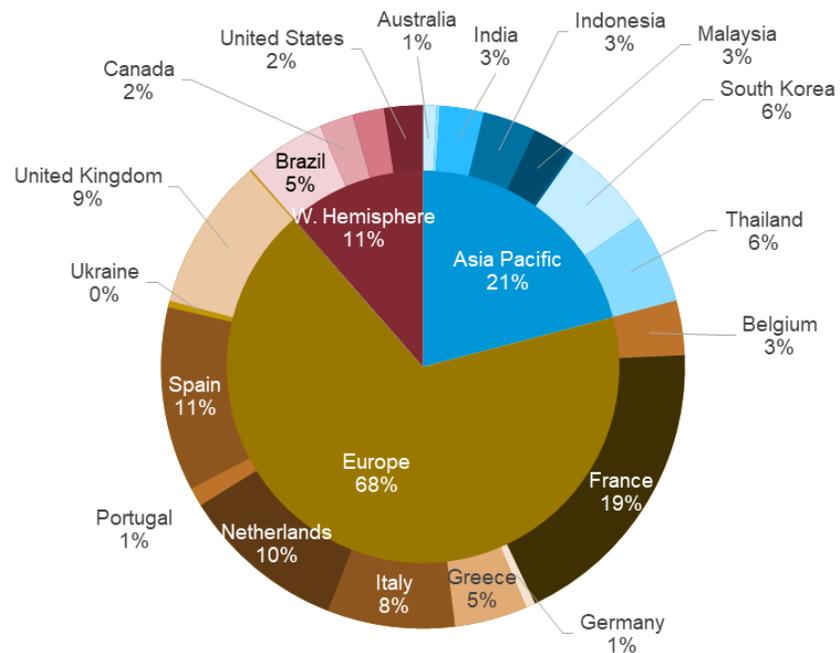
Figure 6. Algeria's total annual exports and imports of crude oil and condensate, 2012–2021

thousand barrels per day



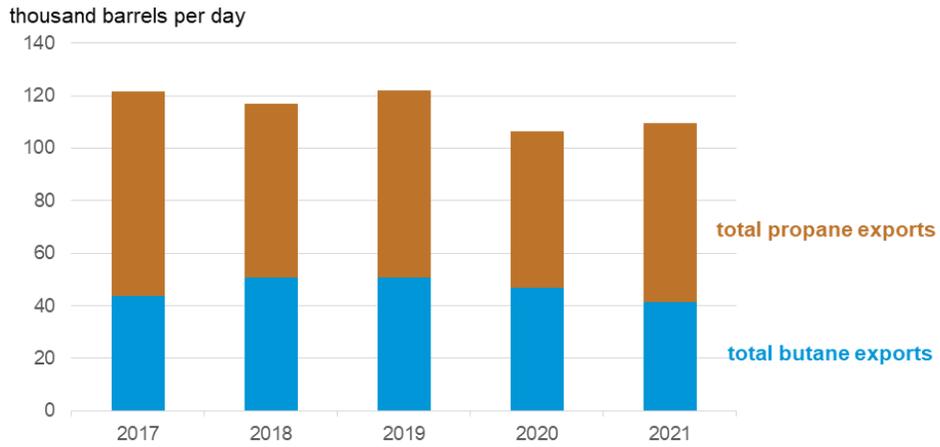
Data source: U.S. Energy Information Administration International Energy Statistics database and Kpler crude oil flows database

Figure 7. Algeria's crude oil and condensate exports by destination, 2021



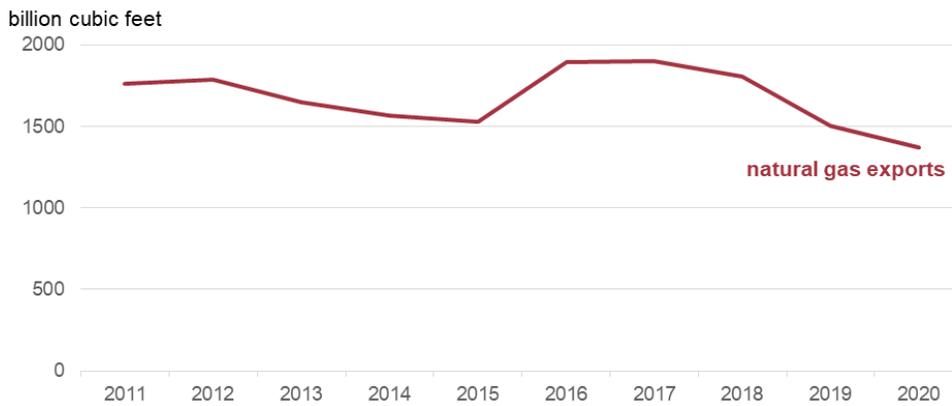
Data source: Kpler crude oil flows database

Figure 8. Algeria's total annual liquefied petroleum gas exports, 2017–2021



eia Data source: Kpler Liquefied Petroleum Gas Products data

Figure 9. Algeria's total annual natural gas imports and exports, 2011–2020



eia Data source: U.S. Energy Information Administration, International Energy Statistics database

Figure 10. Algeria's liquefied natural gas exports by destination, 2021

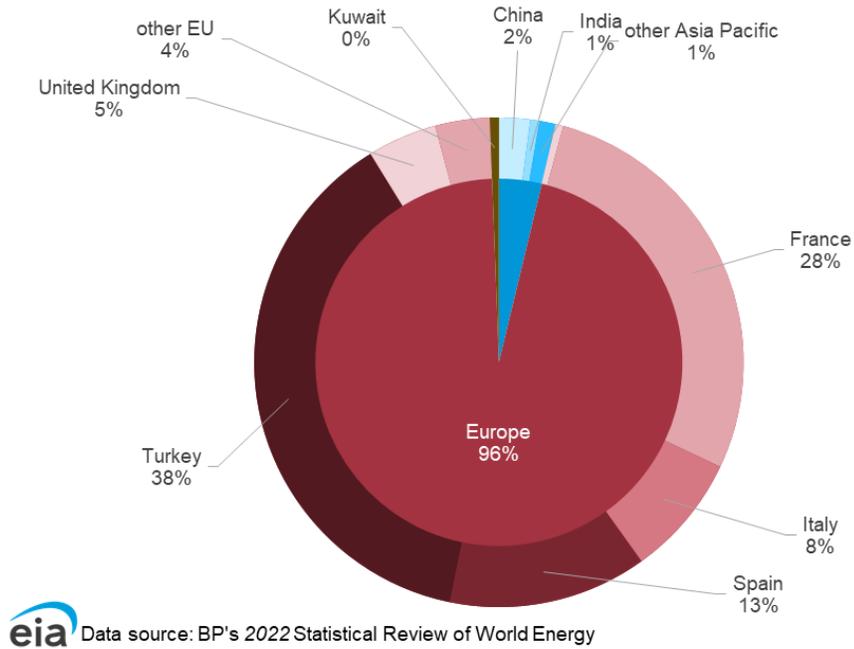


Figure 11. Algeria's piped natural gas exports by destination, 2021

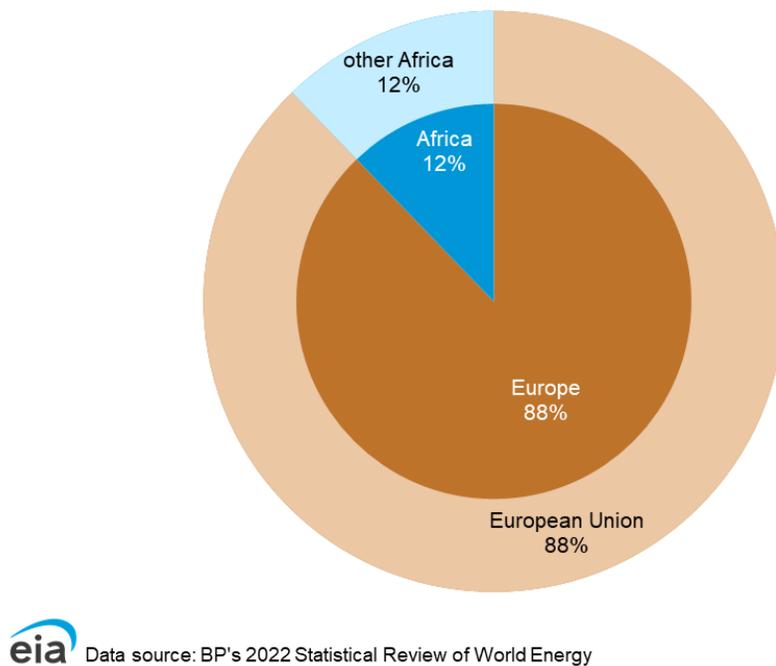


Table 5. Algeria's LNG terminals

| Project name | Ownership | Start date | Number of trains | Number of storage tanks | Nominal liquefaction capacity (billion cubic feet per year) | Storage capacity (million cubic feet) |
|--------------|-----------|------------|------------------|-------------------------|---|---------------------------------------|
| Arzew GL1Z | Sonatrach | 1978 | 6 | 3 | 379 | 11 |
| Arzew GL2Z | Sonatrach | 1981 | 6 | 3 | 394 | 11 |
| Arzew GL3Z | Sonatrach | 2014 | 1 | 2 | 226 | 11 |
| Skikda GL1K | Sonatrach | 2013 | 1 | 1 | 216 | 5 |
| Total | | | | | 1,215 | 38 |

Data source: GIIGNL 2022 Annual Report

Note: LNG=liquefied natural gas

Table 6. Algeria's transcontinental natural gas pipelines

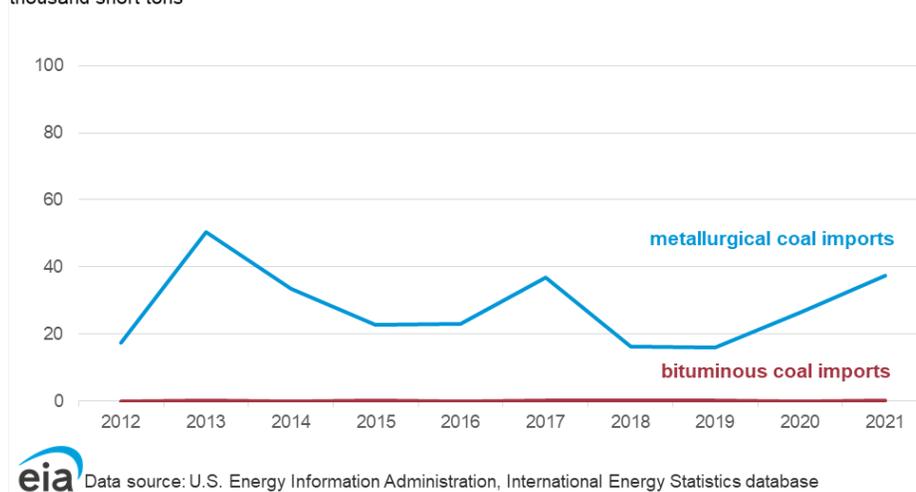
| Pipeline name | Status | Ownership | Route | Start date | Length of pipeline (miles) | Pipeline capacity (billion cubic feet per year) |
|---|--------------------------|---|--|------------|----------------------------|---|
| Enrico Mattei (TransMed) pipeline | operational | Sonatrach, Eni | Algeria to Italy via Tunisia | 1983 | 1547 | 1183 |
| Maghreb-Europe Gas pipeline (MEG) | operational ¹ | Sonatrach, Naturgy, Enagas, Galp Energia | Algeria to Spain/Portugal via Morocco | 1996 | 844 | 424 |
| Medgaz pipeline | operational | Sonatrach, Naturgy | Algeria to Spain via the Mediterranean Sea | 2011 | 473 | 378 |
| Gasdot Algeria - Sardegna Italia (GALSI) pipeline | shelved | Sonatrach, Edison, Enel, Hera Group | Algeria to Italy | unknown | 538 | 283 |
| Trans-Saharan Gas pipeline (TSGP) | proposed | Sonatrach, Nigerian National Petroleum Corporation, Niger Ministry of Petroleum, Energy, and Renewable Energies | Nigeria to Algeria via Niger | unknown | 2580 | 1059 |

Data source: Hydrocarbons Technology, Global Energy Monitor

¹ Deliveries of natural gas from Algeria to Morocco and Spain/Portugal via the MEG pipeline were suspended in October 2021. The pipeline resumed transportation of natural gas, but in the opposite direction, with Spain exporting natural gas to Morocco.

Figure 12. Algeria's total annual coal imports, 2012–2021

thousand short tons



¹ “Algeria Prepares Oil & Gas Bid Round,” *Middle East Economic Survey*, Vol. 65, Issue 44, November 4, 2022.

² “Worldwide Look at Reserves and Production,” *Oil & Gas Journal*, Worldwide Report [Table], December 5, 2022.

³ “Crude Grades,” *McKinsey Energy Insights*, accessed December 6, 2022.

⁴ International Trade Administration, “[Algeria Hydrocarbons Law](#),” *Market Intelligence*, February 25, 2020.

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⁶ “Algeria’s Planned Hassi Messaoud Refinery: Chinese, Korean Firms In The Running,” *Middle East Economic Survey*, Vol. 61, Issue 22, June 1, 2018. “Hassi Messaoud Oil Refinery Project,” *NS Energy Business*, accessed December 6, 2022. “Refinery News Roundup: Some refineries in Africa remain offline,” *S&P Global Platts*, May 18, 2021.

⁷ “Worldwide Look at Reserves and Production,” *Oil & Gas Journal*, Worldwide Report [Table], December 5, 2022.

⁹ “Algeria’s Gas Output Turnaround,” *Middle East Economic Survey*, Vol. 64, Issue 20, May 21, 2021. “Algeria:

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¹⁰ U.S. Energy Information Administration, International Energy Statistics database, accessed December 29, 2022.

¹¹ International Trade Administration, “[Algeria – Renewable Energy: Current Market Trends](#),” *Energy Resource Guide*, accessed January 6, 2023.

¹² “[Algeria Powers Ahead with Huge Renewable Energy Plans](#),” International Energy Forum, June 21, 2021.

¹³ “Algeria Adding Powergen Capacity, But Big CCGT Progress Piecemeal,” *Middle East Economic Survey*, Vol. 62, Issue 28, July 12, 2019. “Algeria Sees Power Efficiency Leap As CCGTs Ramp Up,” *Middle East Economic Survey*, Vol. 63, Issue 42, October 16, 2020.

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- ¹⁴ “Algeria’s Power Output Falls For First Time On Record In 2020,” *Middle East Economic Survey*, Vol. 64, Issue 04, January 29, 2021. “Algeria Launches 1GW Solar PV Tender,” *Middle East Economic Survey*, Vol. 65, Issue 01, January 7, 2022.
- ¹⁵ International Trade Administration, “[Algeria – Renewable Energy: Current Market Trends](#),” *Energy Resource Guide*, accessed January 6, 2023. “[Algeria Powers Ahead with Huge Renewable Energy Plans](#),” International Energy Forum, June 21, 2021.
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- ¹⁷ U.S. Energy Information Administration, International Energy Statistics database, accessed November 1, 2022. Kpler crude oil flows database, accessed January 11, 2023.
- ¹⁸ Kpler crude oil flows database, accessed January 11, 2023.
- ¹⁹ U.S. Energy Information Administration, International Energy Statistics database, accessed November 7, 2022.
- ²⁰ BP, [2022 Statistical Review of World Energy](#), 71st edition, June 2022.
- ²¹ See medium-term and long-term contracts in force for 2021 in the International Group of Liquefied Natural Gas Importers (GIIGNL), [2022 Annual Report](#), May 24, 2022, pg. 12.
- ²² International Group of Liquefied Natural Gas Importers (GIIGNL), [2022 Annual Report](#), May 24, 2022.
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- ²⁴ Sanja Pekic, “[Sonatrach and Sinopec sign Skikda LNG storage tank deal](#),” *Offshore Energy*, February 18, 2022. “Algeria Eyes Greater LNG Access with Skikda Port Expansion,” *Middle East Economic Survey*, Vol. 65, Issue 32, August 12, 2022.
- ²⁵ “[Algeria will expand the capacity of the Medgaz pipeline to Spain by 1/3](#),” Enerdata, November 10, 2021. “[Naturgy and Sonatrach establish that the Medgaz expansion will start operations in the fourth quarter of 2021](#),” Naturgy press release, July 13, 2021.
- ²⁶ Intissar Fakir, “[Given capacity constraints, Algeria is no quick fix for Europe’s Russian gas concerns](#),” *Middle East Institute*, March 8, 2022. Francis Ghilès, “[Escalating rivalry between Algeria and Morocco closes the Maghreb-Europe pipeline](#),” Barcelona Center for International Affairs, November 2021.
- ²⁷ Álvaro Escalonilla, “[Spain allows Morocco to use the Maghreb-Europe gas pipeline in a new sign of rapprochement](#),” *Atalayar*, February 2, 2022. Juan Peña, “[The Maghreb-Europe gas pipeline connecting Spain with Morocco is back on steam](#),” *Atalayar*, June 29, 2022. Safaa Kasraoui, “[Maghreb-Europe Pipeline: Gas Supply Spain Sends To Morocco is From US](#),” *Morocco World News*, July 4, 2022. “[Spain Restarts Natural Gas Flows to Morocco on Maghreb-Europe Pipeline](#),” *Pipeline & Gas Journal*, June 29, 2022.
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