



Country Analysis Brief: Egypt

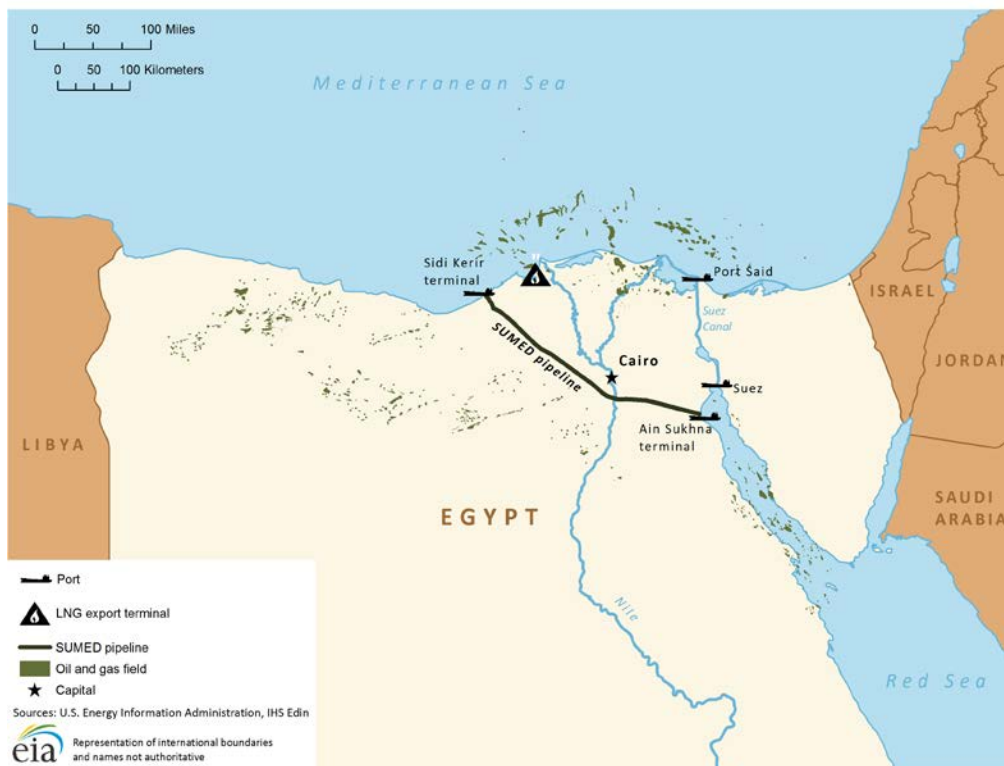
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Overview

Egypt is the largest non-OPEC oil producer in Africa and the second-largest dry natural gas producer on the continent. The country also serves as a major transit route for oil shipped from the Persian Gulf to Europe and the United States.

Egypt is the largest oil producer in Africa outside of the Organization of the Petroleum Exporting Countries (OPEC), and the second-largest natural gas producer on the continent, behind Algeria. Egypt plays a vital role in international energy markets through the operation of the Suez Canal and Suez-Mediterranean (SUMED) Pipeline.

Key oil and natural gas infrastructure in Egypt



The Suez Canal is an important transit route for oil and liquefied natural gas (LNG) shipments traveling northbound from the Persian Gulf to Europe and North America and southbound shipments from North Africa and countries along the Mediterranean Sea to Asia. The SUMED Pipeline is the only alternative route nearby to transport crude oil from the Red Sea to the Mediterranean Sea if ships were unable to navigate through the Suez Canal. Fees collected from the operation of these two transit points are significant sources of revenue for the Egyptian government.

In Africa, Egypt has the third-largest population, after Nigeria and Ethiopia, and the second-highest gross national income (GNI), after Nigeria, according to the World Bank. Egypt's economy suffered during and after the 2011 revolution as the country experienced a sharp decline in tourism revenue and foreign direct investment, according to the International Monetary Fund (IMF). Annual gross domestic product (GDP) growth in Egypt dropped from 5.1% in 2010 to 1.8% in 2011 and still remains below the pre-revolution level, averaging 2.1% in 2013. According to the IMF, financial support, particularly in the form of oil and LNG shipments, from some Persian Gulf countries has helped Egypt to meet its domestic energy demand.

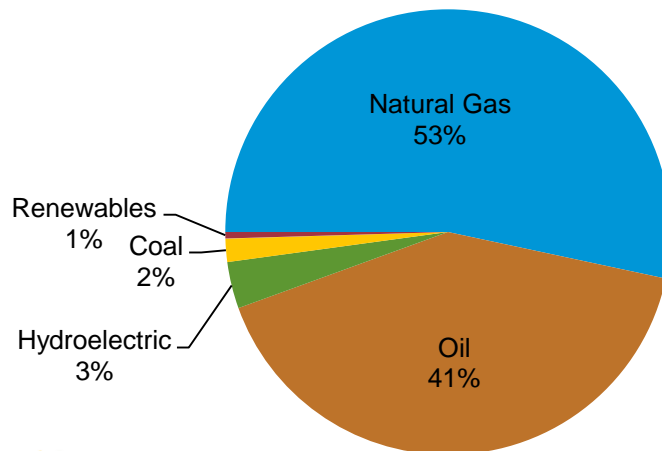
Egypt's economy has not fully recovered since the 2011 revolution. The government continues to fund energy subsidies, which cost the government \$26 billion in 2012, and this has contributed to the country's high budget deficit and the inability of the Egyptian General Petroleum Corporation (EGPC), the country's national oil company, to pay off its debt to foreign operators. EGPC owes foreign oil and gas operators billions of dollars, which has led foreign operators to delay their investments in existing and new oil and natural gas projects. EGPC accumulated \$6.3 billion in outstanding arrears to foreign oil and gas companies, of which \$1.5 billion was paid back in December 2013. The debt has since increased back to \$7.5 billion as of June 2014 and continues to grow.


Total Primary Energy Consumption

Egypt is the largest oil and natural gas consumer in Africa, accounting for more than 20% of total oil consumption and more than 40% of total dry natural gas consumption in Africa in 2013. Energy subsidies, which cost the government \$26 billion in 2012, have contributed to rising energy demand and a high budget deficit.

Egypt's total primary energy consumption was 1.7 million barrels per day (bbl/d) of oil equivalent in 2013, according to the BP 2014 Statistical Review of World Energy. Natural gas and oil are the primary fuels used to meet Egypt's energy needs, accounting for 94% of the country's total energy consumption in 2013. Oil is mostly used in the transportation sector, while natural gas is used in the power sector and transportation sector in the form of compressed natural gas (CNG) in vehicles.

Primary energy consumption in Egypt, by fuel, 2013



 Source: BP Statistical Review of World Energy, 2014

Egypt is the largest oil and natural gas consumer in Africa, accounting for more than 20% of total oil consumption and more than 40% of total dry natural gas consumption in Africa in 2013, based on data from the 2014 BP Statistical Review. The rapid growth of oil and natural gas consumption over the past few decades has been driven by increased industrial output, economic growth, energy-intensive gas and oil extraction projects, population growth, an increase in private and commercial vehicle sales, and energy subsidies.

According to the Middle East Economic Survey (MEES), Egypt spent \$26 billion on fossil-fuel subsidies in 2012, ranking as the eighth-highest spender of fossil fuel subsidies in the world. Energy subsidies, which account for 20% to 25% of government spending, continue to cut into Egypt's budget. Energy subsidies have contributed to Egypt's high budget deficit, and EGPC accumulated \$7.5 billion, as of June 2014, in outstanding arrears to foreign oil companies.

The Egyptian government has attempted subsidy reform. In early 2013, the government increased energy prices for heavy industries, energy inputs for electricity producers, and household electricity use, according to the [2014 African Economic Outlook](#). Egypt is also in the process of implementing a smart card system to target the subsidies toward the poorest people. The smart cards would be used by drivers at the fuel pumps. The government plans to reduce its petroleum product subsidies by 22% during the 2014-15 fiscal year (beginning July 1, 2014), but the government has missed similar targets in the past. Even if the target is met, the fiscal gain would be offset by an 86% increase in electricity subsidy spending, which is also included in Egypt's 2014-15 fiscal budget. According to MEES, subsidy spending in the current budget is planned for \$27 billion, or 24% of government spending.

Petroleum and other liquids

One of Egypt's challenges is to satisfy increasing oil demand amid falling production. Total oil consumption grew by an annual average of 3% over the past 10 years, averaging almost 770,000 bbl/d in 2013. Egypt's oil consumption has outpaced production since 2010.

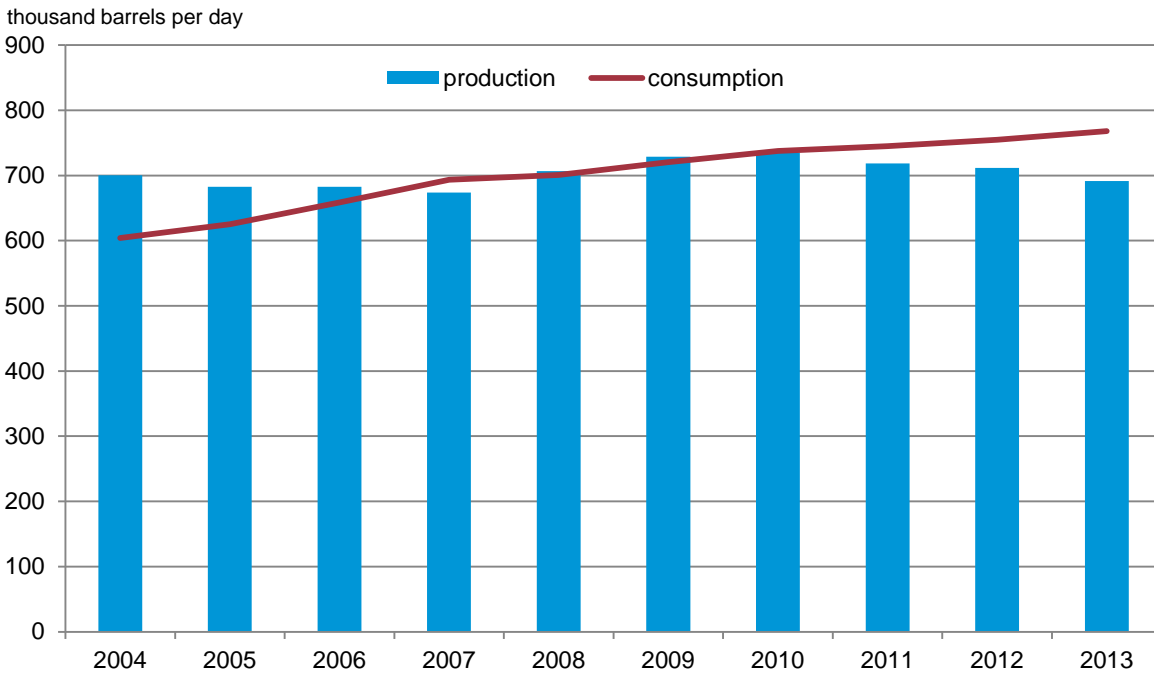
According to the *Oil & Gas Journal* (OGJ), Egypt held 4.4 billion barrels of proved oil reserves as of January 1, 2014. EGPC places Egypt's official oil reserve estimate lower at 4 billion barrels, of which 2.8 billion barrels is crude oil and 1.2 billion barrels is condensate. New oil discoveries have boosted Egypt's reserve estimate over the past few years. According to the *Arab Oil and Gas Journal*, Egypt has maintained a sustained level of exploration activity, and there have been large numbers of oil and gas made each year. In 2013, 86 discoveries of mostly oil were made, according to EGPC.

In 2013, Egypt's petroleum and other liquids (total oil) production averaged just under 700,000 bbl/d. Egypt's oil production comes from the Western Desert (51%), Gulf of Suez (20%), Eastern Desert (12%), Sinai (10%), Mediterranean Sea (5%), Nile Delta (1%), and Upper Egypt (less than 1%), according to EGPC. Most of Egypt's production is derived from relatively small fields that are connected to larger regional production systems.

Egypt's oil production was declining for more than a decade after reaching a peak of more than 900,000 bbl/d in the mid-1990s. In 2008, increased output from the Western Desert and offshore areas helped to increase production slightly, but production started to decline again shortly after. The use of enhanced oil recovery (EOR) techniques at mature fields has eased production declines. NGPL output has increased over the past decade as a result of expanding natural gas production and has partially offset declines in crude oil production.

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Petroleum and other liquids production and consumption in Egypt



Source: U.S. Energy Information Administration

Oil Sector Management

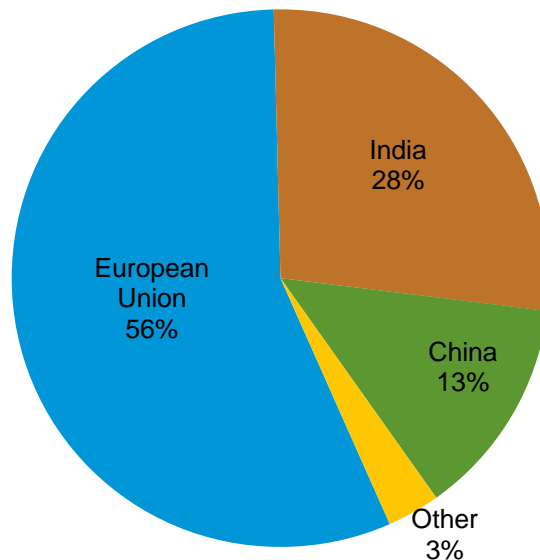
The Egyptian General Petroleum Corporation (EGPC), the national oil company, is charged with managing upstream and downstream activities. EGPC's subsidiary, General Petroleum Company, holds several exploration licenses in the Sinai, the Gulf of Suez, and the Western Desert, according to the *Arab Oil and Gas Journal*. EGPC owns and operates much of the country's refining capacity as well. International oil companies (IOCs) also play a large role in Egypt's upstream oil sector, holding shares in producing assets in partnership with EGPC. BP, Eni, BG, and Apache are the major oil and gas players in Egypt, with the first three primarily invested offshore and Apache in the onshore Western Desert, according to IHS CERA.

Crude Oil and Condensate Exports

Egypt exported about 189,000 bbl/d of crude oil, including condensate, in 2013, according to data from EuroStat, Global Trade Atlas, and the U.S. Energy Information Administration (EIA). Most of Egypt's exports were sent to countries in the European Union (56%), India (28%), and China (13%) in 2013. Egypt's main oil grades are Suez, Belayim, and Western Desert. The Suez Blend comes from declining offshore fields in the Gulf of Suez, operated by The Gulf of Suez Petroleum Co. (Gupco), a joint venture (JV) between BP and EGPC, according to the Energy Intelligence Group. The Belayim Blend is sourced from aging oil fields in the Gulf of Suez operated by the Belayim Petroleum Co. (Petrobel), a JV between Eni and EGPC. Most of the Suez and Belayim Blend crudes are refined domestically, with only a small volume of these grades destined for exports. Both blends are usually sold at a discount to the Brent contract because of their relatively high sulfur content.

The Western Desert Blend is a light, relatively sweet grade crude with a high wax content that is sourced from oil fields in the Western Desert. The main producer in the area is Khalda Petroleum Co., a JV between Apache and EGPC. Agiba (JV between Eni and EGPC) and Bapetco (JV between Shell and EGPC) also hold assets that feed the Western Desert Blend, according to the Energy Intelligence Group. Similar to the other two blends, much of the Western Desert Blend is refined domestically, and the remainder is sold to international markets.

Egypt's crude oil and condensate exports, 2013



Note: Total exports were 189,000 bbl/d.
Source: U.S. Energy Information Administration, Eurostat, and Global Trade Atlas

Refined Oil Products

Egypt has the largest oil refinery capacity in Africa, although it operates well below capacity. The country's refinery output declined by 28% from 2009 to 2013, despite growing domestic oil consumption. As a result, Egypt must import petroleum products to make up for the shortfall.

Estimates of Egypt's oil refinery capacity differ among publications. The *Arab Oil and Gas Journal* estimates that Egypt's refinery capacity is 704,000 bbl/d, while OGJ estimates that it is higher at 726,250 bbl/d. Nevertheless, both estimates still qualify Egypt as the largest oil refining capacity holder in Africa. Egypt's refineries mostly process domestically produced crude oil, and refined products are mostly sold to local markets. The refineries are operated by EGPC subsidiaries.

Egypt's refinery capacity is expected to increase in 2015 when a new 96,000 bbl/d refinery begins operations. Construction began in 2012, and it is being developed by the [Egyptian Refining Corporation \(ERC\)](#), a public-private partnership financed by Qalaa Holdings (formerly Citadel Capitol) and EGPC. A second refinery project that has made much less progress is a proposed 300,000 bbl/d refinery. EGPC

signed a memorandum of understanding with a Chinese consortium in May 2010 to develop this facility, according to the *Arab Oil and Gas Journal*.

Table 1. Egypt's Oil Refineries

Refinery Operator	Location	Nameplate Capacity (barrels per day)
El-Nasr Petroleum Co.	El Suez	100,000
Cairo Petroleum Refining Co.	Mostorod (Cairo)	142,000
Alexandria Petroleum Co.	Alexandria (El-Mex)	115,000
Middle East Oil Refinery	Alexandria (Sidi Kerir)	100,000
Ameriya Petroleum Refining Co.	Alexandria	75,000
Suez Petroleum Processing Co.	El Suez	68,000
Assiut Petroleum Refining Co.	Assiut	50,000
Cairo Petroleum Refining Co.	Tanta	54,000
Total		704,000

Source: Arab Oil and Gas Journal, Egyptian General Petroleum Company

According to data from OPEC's Annual Statistical Bulletin, Egypt's refined petroleum output averaged 445,000 bbl/d in 2013, suggesting that refinery utilization was about 63%. Egypt's refinery output declined by 28% from 2009 to 2013. FACTS Global Energy attributes this decline to Egypt's policy that permits foreign oil producers to export more crude as repayment of EGPC's financial debt. As a result, Egypt's crude oil exports have remained virtually flat over the past few years, despite declining production. In turn, there is a lower volume of domestic crude available for the domestic refineries and Egypt must make up for the difference by importing petroleum products and/or crude oil. FACTS Global Energy estimated that Egypt's crude oil imports averaged 80,000 bbl/d as of late 2013.

Egypt imported almost 170,000 bbl/d of petroleum products in 2013, according to OPEC's Annual Statistical Bulletin. Trade data from Global Trade Atlas suggest that most of the imports came from countries in the European Union and Asia. Some Persian Gulf countries have sent Egypt \$3 billion in petroleum products to help the country cope with lower domestic refined output and natural gas supply shortfalls. Saudi Arabia, Kuwait, and the United Arab Emirates (UAE) have sent Egypt gasoil and fuel oil to help fuel the country's power plants, according to FACTS Global Energy.

Natural Gas

Egypt's dry natural gas production has declined by an annual average of 3% from 2009 to 2013. Substantial gas discoveries in the deep offshore Mediterranean Sea and in other areas in Egypt remain undeveloped because the price that Egypt's government is willing to pay foreign operators for the gas is too low, making some investment projects commercially unviable.

According to OGJ estimates as of January 1, 2014, Egypt holds 77 trillion cubic feet (Tcf) of proved natural gas reserves, an increase from the 2010 estimate of almost 59 Tcf and the fourth-largest amount

in Africa, after Nigeria, Algeria, and Mozambique. New discoveries are made almost every year, particularly in the deepwater Mediterranean Sea, the Nile Delta, and the Western Desert.

Despite new discoveries, Egypt's dry natural gas production has declined by an annual average of 3% from 2009 to 2013. Egypt produced almost 2.0 Tcf of dry natural gas in 2013, of which almost 1.9 Tcf was domestically consumed and more than 0.1 Tcf was exported. Egypt has been diverting natural gas supply away from exports to the domestic market to meet demand. As a result, Egypt's total gas exports have declined substantially by an annual average of 30% from 2010 to 2013 as rising domestic demand, particularly in the electricity sector, is competing with exports.

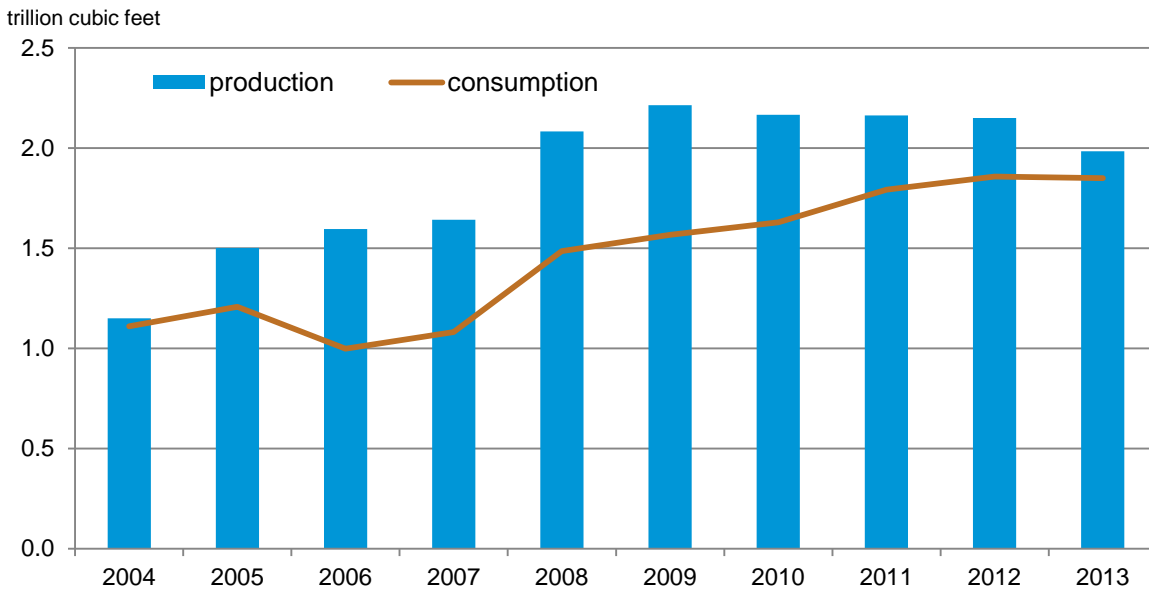
Egypt plans to start importing LNG this year to satisfy its natural gas consumption, which increased by an annual average of 7% over the past 10 years. In May 2014, Egyptian Natural Gas Holding Company (EGAS), the country's national gas company, signed a letter of intent with Hoegh LNG of Norway to use one of its Floating Storage and Regasification Units (FSRUs) for five years to allow Egypt to import LNG. The LNG import terminal will be located at the Ain Sukhna port, along the Red Sea and is planned to be operational in September 2014. Egypt plans to import 450 million cubic feet per day of LNG during the initial four months, potentially from Russia's Gazprom, Algeria's Sonatrach, and France's EDF, according to the Energy Intelligence Group.

Much of the natural gas consumed in Egypt is used to fuel electric power plants. The government encourages households, businesses, and the industrial sector to consider natural gas as a substitute for petroleum products and coal. In January 2008, the World Bank approved loans for the Natural Gas Connections Project, which aims to switch consumption of liquefied petroleum gas (LPG) to natural gas through investment in new connections and to further expand natural gas use in densely populated, low-income areas. The share of natural gas consumed in the transportation sector also increased since the development of compressed natural gas (CNG) infrastructure and vehicles.

The price that Egypt pays foreign operators for natural gas that they produce in Egypt is capped at \$2.65 per million British thermal unit (Btu). The price has presented a major obstacle for foreign operators wanting to develop gas projects in Egypt because it makes some of the projects economically unviable. As a result, substantial gas discoveries in the deep offshore Mediterranean Sea and in other areas in Egypt remain undeveloped, according to the Energy Intelligence Group. EGAS recently announced that it was considering increasing the price in some cases.

Another impediment to increasing natural gas output is the substantial debt that Egypt owes foreign operators. EGPC owed \$7.5 billion as of June 2014 to foreign operators. Some of those operators have reduced their drilling activity and delayed project investments that could help reverse Egypt's declining production.

Dry natural gas production and consumption in Egypt



Note: 2013 is an estimate.

Source: U.S. Energy Information Administration and BP 2014 Statistical Review

Sector Organization

EGAS oversees the development, production, and marketing of natural gas. EGAS is also responsible for organizing international exploration bid rounds and awarding gas exploration licenses. EGAS and/or EGPC participate with international companies to develop and operate natural gas fields. The Egyptian Natural Gas Company (GASCO) operates many of the gas processing plants.

Foreign companies operating in Egypt's gas sector must direct all or a portion of their current production to the domestic market, and the government has demanded that new discoveries be earmarked for the domestic market. Major foreign players in Egypt's upstream natural gas sector include Eni, BG Group, BP, Shell, and Apache. The BG Group produces about 40% of Egypt's natural gas production, mainly from the offshore Nile Delta, according to IHS CERA. The vast majority of BG's output is used to supply the domestic market. Another major producer, BP, is planning to increase output with its recent discoveries in the Gulf of Suez and the Mediterranean Sea.

Natural Gas Exports

Egypt's natural gas exports have declined since 2009 because of increasing consumption and declining production. Egypt's government has been diverting natural gas supplies away from exports to the local market. The country plans to start importing LNG after September 2014 when it installs a regasification unit.

Dry natural gas exports, which began in 2003, increased rapidly with the completion of the first stage of the Arab Gas Pipeline (AGP) linking Egypt to Jordan along with the startup of LNG production in 2004. However, in recent years Egypt's natural gas exports declined substantially, falling by an annual average of 30% from 2010 to 2013. In 2011 and 2012, sabotage attacks repeatedly disrupted gas exports through

the AGP, substantially curtailing the amount sent to Jordan and Israel. In 2012, Egypt halted natural gas exports to Israel by canceling its long-term contract to supply Israel with natural gas because of a payment dispute. The move also underlined Egypt's need to divert natural gas supply away from exports to its local market to meet demand.

Table 2. Egypt's Natural Gas Exports

billion cubic feet	2008	2009	2010	2011	2012	2013
Total Exports	597	647	535	371	259	na
LNG Exports	496	452	343	307	240	135
Pipeline Exports	101	194	193	64	19	na

Source: BP Statistical Review, IHS Energy, and Cedigaz

Pipeline Exports

The AGP originates in Egypt and connects to Jordan, Syria, and Lebanon. In 2008, a leg extension of the AGP was built that runs under water from the starting point in al-Arish in Egypt to Ashkelon in Israel. The AGP had been sabotaged on over a dozen occasions between 2011 and 2012, which resulted in gas supply disruptions to Jordan and Israel. Total exports via the AGP dropped to 19 billion cubic feet (Bcf) in 2012, of which the majority was sent to Jordan, with a smaller amount delivered to Israel before exports were terminated. This level is a substantial decrease from the gas volumes transported via AGP prior to the revolution, which totaled 193 Bcf in 2010.

Liquefied Natural Gas (LNG)

Egypt has two LNG plants with a combined nameplate (or design) capacity of around 610 Bcf per year (or 12.7 million tons per year). The Spanish-Egyptian Gas Company (Segas) LNG plant in Damietta started production in late-2004. The plant is owned by Union Fenosa Gas (80%), a joint venture between Spain's Gas Natural and Italy's Eni, along with Egypt's national companies EGPC and EGAS (20%). The LNG plant has one train with a nameplate capacity of 264 Bcf per year, although it has not been operational for more than a year because of a lack of natural gas supplies. The Egyptian government redirected natural gas supplies to the domestic market to mitigate fuel shortages and power outages, particularly during the summer months. Gas Natural and Eni filed an international arbitration case against EGAS for not abiding by their feed gas contract.

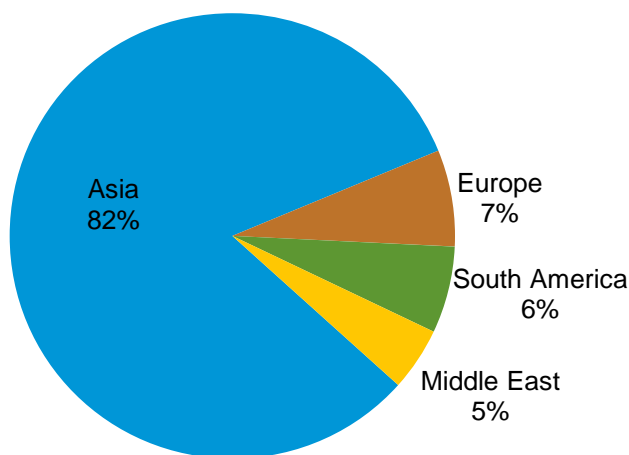
In 2013, Egypt exported 135 Bcf of LNG, all of which was exported from Egypt's second LNG plant, the Egyptian LNG (ELNG). Egypt's total LNG exports were cut in half in 2013 compared with 2012. ELNG is operated by a joint venture among BG, Petronas, and GDF Suez. It has two trains with a combined nameplate capacity of 346 Bcf per year and is located in Idku near Alexandria. The ELNG plant, which is fed gas from the BP-operated West Delta Deep Marine (WDDM) offshore concession, is running well below capacity.

Egypt's LNG exports have continued to dramatically drop in 2014, averaging only 13 Bcf during the first half of the year, according to IHS Energy data. Until Egypt is able to import gas, domestic production will continue to be diverted to meet domestic demand. The country plans to start importing LNG after

September 2014 when it receives a Floating Storage and Regasification Unit (FSRU) from Hoegh LNG of Norway.

In 2013, most of Egypt's LNG was exported to Asia (82%), with South Korea being the primary destination, followed by Japan, China, India, and Taiwan, according to IHS Energy data. Europe was the second-largest regional destination in 2013. Europe previously had been the leading export destination for Egypt's LNG, but Europe's LNG imports from Egypt dropped from 153 Bcf in 2011 to 9 Bcf in 2013, according to IHS Energy data. This drop reflects the overall decrease in Europe's LNG imports in 2012 and increased competition for LNG on the global market.

Egypt's liquefied natural gas (LNG) exports, by destination, 2013



Source: IHS Energy, Annual LNG Trade

Suez Canal/SUMED Pipeline

The Suez Canal and SUMED Pipeline are strategic routes for Persian Gulf oil and natural gas shipments to Europe and North America. These two routes combined accounted for about 8% of the world's seaborne oil trade in 2013.

Suez Canal

The Suez Canal is located in Egypt and connects the Red Sea and Gulf of Suez with the Mediterranean Sea. In 2013, total petroleum and other liquids (crude oil and refined products) and LNG accounted for 20% and 3% of total Suez cargoes, measured by cargo tonnage, respectively. The Suez Canal is unable to handle Ultra Large Crude Carriers (ULCC) and fully laden Very Large Crude Carriers (VLCC) class crude oil tankers. The Suezmax was the largest ship capable of navigating through the canal until 2010 when the Suez Canal Authority extended the canal depth to 66 feet to allow more than 60% of all tankers to use the Suez Canal, according to the Suez Canal Authority.

In 2013, nearly 3.2 million bbl/d of total oil (crude oil and refined products) transited the Suez Canal in both directions, according to the Suez Canal Authority. This is the largest amount ever shipped through the Suez Canal. The majority of the oil was sent northbound (1.9 million bbl/d) toward European and North American markets, and the remainder was sent southbound (1.3 million bbl/d), mainly toward Asian markets.

Oil exports from Persian Gulf countries ([Saudi Arabia](#), [Iraq](#), [Kuwait](#), [United Arab Emirates](#), [Iran](#), [Oman](#), [Qatar](#), and Bahrain) accounted for 79% of Suez Canal northbound oil flows. The largest importers of northbound oil flows through the Suez Canal in 2013 were European countries (68%) and the United States (16%). Oil exports from European countries made up the majority (66%) of Suez southbound oil flows, followed by North Africa (Algeria and [Libya](#) combined made up 16%). The largest importers of Suez southbound oil flows through the Suez Canal were Asian countries (74%).

Total traffic through the Suez Canal fell in 2009, and total oil flows dropped to 1.8 million bbl/d, their lowest level in recent years. The decrease in oil flows during that time reflected the collapse in world oil market demand that began in the fourth quarter of 2008, followed by OPEC production cuts (primarily from the Persian Gulf), which caused a sharp fall in regional oil trade starting in early 2009. Egypt's 2011 revolution did not have any noticeable effect on oil transit flows through the Suez Canal. Over the past few years, oil flows through the Suez Canal have increased, recovering from previous lower levels during the global economic downturn.

SUMED Pipeline

The 200-mile long SUMED Pipeline, or Suez-Mediterranean Pipeline, transports crude oil through Egypt from the Red Sea to the Mediterranean Sea. The crude oil flows through two parallel pipelines that are 42 inches in diameter, with a total pipeline capacity of 2.34 million bbl/d. Oil flows north starting at the Ain Sukhna terminal along the Red Sea coast to its end point at the Sidi Kerir terminal on the Mediterranean Sea. SUMED is owned by the Arab Petroleum Pipeline Co., a joint venture between the Egyptian General Petroleum Corporation (50%), Saudi Aramco (15%), Abu Dhabi's International Petroleum Investment Company (15%), multiple Kuwaiti companies (15%), and Qatar Petroleum (5%).

The SUMED Pipeline is the only alternative route to transport crude oil from the Red Sea to the Mediterranean Sea if ships were unable to navigate through the Suez Canal. Closure of the Suez Canal and the SUMED Pipeline would necessitate diverting oil tankers around the southern tip of Africa, the Cape of Good Hope, adding approximately 2,700 miles to transit from Saudi Arabia to the United States, increasing both costs and shipping time, according to the U.S. Department of Transportation. According to the International Energy Agency (IEA), shipping around Africa would add 15 days of transit to Europe and 8-10 days to the United States.

Fully laden VLCCs going toward the Suez Canal also use the SUMED Pipeline for lightering. Lightering occurs when a vessel needs to reduce its weight and draft by offloading cargo to enter a restrictive waterway, such as a canal. The Suez Canal is not deep enough for a fully-laden VLCC and, therefore, a portion of the crude is offloaded at the SUMED Pipeline at the Ain Sukhna terminal. The now partially-laden VLCC goes through the Suez Canal and picks up the offloaded crude at the other end of the pipeline at the Sidi Kerir terminal.

In 2013, 1.4 million bbl/d of crude oil was transported through the SUMED Pipeline to the Mediterranean Sea, which was then loaded onto a tanker for seaborne trade. SUMED crude flows decreased over the past few years, but the decrease has been offset by more oil transiting northbound via the Suez Canal.

Total oil flows via SUMED and the Suez Canal were 4.6 million bbl/d in 2013, 0.1 million bbl/d higher compared with the previous year. Total oil flows via the Suez Canal and SUMED pipeline accounted for about 8% of total seaborne-traded oil in 2013.

Table 3. Suez Canal and SUMED Pipeline Flows of Oil and Liquefied Natural Gas (LNG)

million barrels per day	2008	2009	2010	2011	2012	2013
Total oil flows via the Suez Canal and SUMED pipeline	4.6	3.0	3.1	3.8	4.5	4.6
Suez Canal total flows						
crude oil	1.2	0.6	0.7	0.7	1.4	1.5
refined products	1.3	1.3	1.3	1.4	1.6	1.7
total oil	2.5	1.8	2.0	2.2	3.0	3.2
LNG (*Tcf per year)	0.6	0.8	1.6	2.1	1.5	1.2
Suez Canal northbound flows						
crude oil	0.9	0.3	0.4	0.5	0.9	1.1
refined products	0.7	0.7	0.7	0.9	0.8	0.7
total oil	1.6	1.0	1.2	1.4	1.7	1.9
LNG (Tcf per year)	0.3	0.8	1.5	1.8	1.2	1.0
Suez Canal southbound flows						
crude oil	0.2	0.3	0.3	0.2	0.5	0.4
refined products	0.6	0.6	0.5	0.6	0.8	1.0
total oil	0.8	0.9	0.8	0.8	1.3	1.3
LNG (Tcf per year)	0.3	0.1	0.1	0.2	0.3	0.2
SUMED pipeline crude oil flows	2.1	1.2	1.1	1.7	1.5	1.4

Note: Totals may not exactly match corresponding values as a result of independent rounding.

Note: *Trillion cubic feet is Tcf.

Source: Suez Canal Authority (with EIA conversions) and EIA analysis based on Lloyd's Maritime Intelligence Unit (APEX).

Liquefied natural gas (LNG)

LNG flows through the Suez Canal in both directions were 1.2 Tcf in 2013, accounting for 10% of total LNG transported worldwide.

LNG flows through the Suez Canal in both directions were 1.2 Tcf in 2013, accounting for around 10% of total LNG traded worldwide. Southbound LNG transit mostly originates in Egypt and Algeria and is largely destined for Asian markets, while northbound transit is mostly from Qatar mainly destined for European markets. The rapid growth in LNG flows through the Suez Canal after 2008 represents the use of multiple LNG trains in Qatar in 2009-10.

LNG flows through the Suez Canal in both directions have declined from their peak of almost 2.1 Tcf in 2011. The decrease mostly reflects the fall in northbound LNG flows and is consistent with LNG import data for the United States and Europe, which show that total LNG imports into both areas decreased, particularly from Qatar. U.S. LNG imports from Qatar fell by 63% from 2011-2012 and again by 78% in

2013. The changes reflect growing domestic natural gas production in the United States, a decrease in LNG demand in some European countries, and strong competition for LNG in the global market. As a result, total Suez LNG flows as a share of total LNG traded worldwide fell to 10% in 2013, compared with 18% in 2011.

Electricity

Egypt experiences frequent electricity blackouts because of rising demand, natural gas supply shortages, aging infrastructure, and inadequate generation and transmission capacity. Ongoing political and social unrest in Egypt has slowed the government's plans to expand power generation capacity by 30 GW by 2020.

Egypt's generating capacity at the end of 2013 was 27 gigawatts (GW), slightly higher than the daily peak demand of 24 GW, according to MEES. Egypt generated almost 152 billion kilowatthours (KWh) of electricity in 2012, of which about 70% was fueled by natural gas, 20% from oil, and 10% from renewables, mostly hydropower generation.

Egypt struggles with natural gas shortages, particularly during the summer months and typically imports fuel oil and diesel to cover the shortfall. Rising power demand, natural gas supply shortages, ageing infrastructure, and inadequate generation and transmission capacity have led to frequent blackouts in Egypt.

Ongoing political and social unrest in Egypt has slowed the government's plans to expand power generation capacity by 30 GW by 2020. As a result, Egyptian electricity consumption is increasing much faster than capacity expansions. Private sector organizations and international organizations are providing funds toward brownfield and greenfield projects. The Arab Fund for Economic and Social Development is loaning Egypt \$195 million to upgrade a 620 megawatt (MW) oil-fired power plant in Assiut. The OPEC Fund for International Development and the World Bank are providing \$585.4 million and \$70 million, respectively, to finance the gas-fired 1.95 GW Helwan South plant. The project's total cost is estimated at \$2.4 billion.

Egypt is also planning to expand its power system interconnection with countries in the Middle East and Africa. Egypt and Saudi Arabia signed a \$1.6 billion deal to connect the two countries with a 3,000 MW electricity cable. This project will indirectly expand each country's electricity capacity by pulling from each other's supplies during peak demand times. According to Business Monitor International (BMI), peak demand times are at different times of the day in each country. Peak demand times are between noon and midnight in Saudi Arabia and after sunset in Egypt. The connection will provide both Saudi Arabia and Egypt with an extra power source to mitigate peak demand shortfalls. The project's construction is expected to begin in 2015 with completion three years later.

Egypt's electric transmission grid is already connected to Jordan, Syria, Iraq, Turkey, and Libya, according to BMI. Egypt is also a part of the Nile Basin Initiative and has tentative plans to interlink its transmission grid with some countries within the organization.

Renewable Energy Sources

Hydroelectricity

Hydropower is Egypt's third-largest energy source after natural gas and oil. In 2012, Egypt generated 13.2 billion KWh of hydroelectricity, almost all of which came from the Aswan High Dam and the Aswan Reservoir Dams across the Nile River. However, much of the Nile River's hydropower potential has already been exploited, and as a result, Egypt's New and Renewable Energy Authority (NREA) is actively pursuing other types of renewable projects, primarily solar and wind power, to diversify the country's energy mix. The government plans to double the share of renewable energy used for power generation to 20% by 2020 from its current share of 10%.

SOLAR

Egypt's first solar-thermal power plant, located in Kuraymat just south of Cairo, has the capacity to generate 140 MW of solar-thermal energy. The plant was connected to the national grid in June 2011, according to the U.S. National Renewable Energy Laboratory (NREL). The plant uses concentrated solar power (CSP) with back-up natural gas-fired generators. The World Bank and the Japan International Cooperation Agency helped to finance the construction of the solar-thermal plant. Recently, Egypt announced a plan to invest \$1 billion to develop solar projects.

WIND

According to NREA, Egypt has abundant wind power resources, especially in the Gulf of Suez and Nile Valley. Egypt generates wind power mainly from the Zafarana and Hurghada wind farms. Egypt's largest non-hydro renewable project is the Zafarana wind farm located on the western coast of the Gulf of Suez. The wind farm houses a number of wind projects that were developed in several stages and financed in cooperation with development banks from Germany, Denmark, Spain, and Japan. The government plans to expand wind capacity over the coming years as part of a plan to increase wind generation to 7.2 GW by 2020.

Nuclear Power

According to the [Nuclear Threat Initiative](#) (NTI), Egypt's civil nuclear program is in the research and development phase. The country operates two small [research reactors](#), which are much less powerful than a commercial nuclear power reactor. Egypt does not operate any commercial nuclear reactors but has proposed plans in the past to build a nuclear power plant at El Dabaa on the Mediterranean Coast. However, project timelines have repeatedly been delayed, and Egypt's nuclear power plans are uncertain.

Notes

- Data presented in the text are the most recent available as of August 14, 2014.
- Data are EIA estimates unless otherwise noted.

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