EGYPT'S NATURAL GAS PIPELINES

TOWARDS A REGIONAL TRANSIT HUB

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TOWARDS A REGIONAL TRANSIT HUB

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Egypt spares no efforts to avail natural gas as a transitional fuel; it has become a strategic priority in the energy transition. Natural Gas pipelines are a prerequisite for the deployment and maximization of the use of natural gas to cope with Egypt's ambitious economic and social development plans. In this regard, Egypt takes advantage of its extensive natural gas pipeline network all over the country to transport natural gas from areas of production to midstream and exporting points. Furthermore, Egypt strives to deliver its natural gas to the global market, especially after achieving self-sufficiency.

Hence, Egypt has put a great deal of interest in developing its pipeline infrastructure to allow exports, and adding more pipelines to connect to other countries, especially those in the Mediterranean region. This is in addition to exploiting its two gas liquefaction plants in Idku and Damietta, from which it exports liquified natural gas (LNG) to global markets.

This report gives an overview of Egypt's natural gas pipelines connecting producing regions and midstream plants, and the pipelines connecting the Egyptian market to the Eastern Mediterranean countries, focusing on pipelines' features and destinations.

Flashbacks

Egypt emphasized the importance of pipelines in transporting natural gas, both domestically and internationally. In 2000, Egypt took a significant step forward by signing a memorandum of understanding (MoU) with Syria, to which Jordan became included in 2001, to establish the first natural gas export pipeline, according to the Ministry of Petroleum and Mineral Resources (MoPMR). This pipeline, known as the Arab Gas Pipeline (AGP), which started in 2003, according to the Egyptian Natural Gas Holding Company (EGAS).

NATIONAL PIPELINES OVERVIEW

1. Gulf of Suez/Sinai

There are seven natural gas pipelines linking the Gulf of Suez to Sinai, with a total capacity of about 835.8 million cubic feet per day (mmcf/d); two of which (Trans Gulf Gas and Zaafarana-Korimat pipelines) transport natural gas to be pumped in two stations: Ras Bakr Transmission Station and Korimat Power Station. The pipeline linking Suez and Port Said has the largest pipeline capacity in the Gulf of Suez and Sinai, transporting about 230.3 mmcf/d, according to Wood Mackenzie.

Pipeline	From	To	Length (Km)	Capacity (mmcf/d)
Trans Gulf Gas	Petreco Plant	Ras Bakr Transmission Station	75	110
Zaafarana-Korimat	Zaafarana	Korimat Power Station	163	105
Zeit Bay-Ras Shukheir	Zeit Bay (Pre-2017)	Ras Shukheir	40	140
Ras Shukheir-Suez Gas Trunkline	Ras Shukheir	Suez	245	160
Suez-Cairo Ring	Suez	Cairo Ring	150	90.5
Suez-Port Said		Port Said	160	230.3
El Arish Gas Pipeline	Port Said	El Arish Power Station	185	-

2. Nile Delta/Cairo/Nile Valley

The Nile Delta, Cairo, and the Nile Valley are connected by 10 pipelines to transport natural gas, with a total length of 612 kilometers (km), and about 2,200 mmcf/d natural gas transporting capacity, according to Wood Mackenzie.

Pipeline	From	To	Length (Km)	Capacity (mmcf/d)
Abu Madi-Talkha I	Abu Madi	Talkha Distribution Station	35	-
Abu Madi-Talkha II			35	-
Talkha-Tanta-Cairo	Talkha Distribution Station	Cairo	125	800
Abu Madi-Damietta	Abu Madi	Damietta	42	-
Meadia-Damanhur	Abu Qir Development Area	Damanhur	50	360
Alexandria Network-Damanhur	Alexandria		45	-
Damanhur-Tanta	Damanhur	Tanta	60	700.1
Cairo Ring-Port Said Line	Cairo Ring	Port Said	130	230.3
Korimat-Al Tebbin	Korimat Power Station	Al Tebbin Power Station	60	110
Korimat-Beni Suef		Beni Suef	30	-

3. Western Desert

The Western Desert in Egypt includes a network of multiple natural gas pipelines, including seven pipelines linking the Western Desert on one side and the Mediterranean Sea and Matrouh on the other, with a total length of 514 km.

These seven pipelines have a total capacity of 2,892 mmcf/d. The Tarek-Amerya gas pipeline stands out as the largest among them in terms of length, diameter, and capacity. With a capacity of 950 mmcf/d, it spans a length of 231 km and has a diameter of 34 inches, according to Wood Mackenzie.

Pipeline	From	To	Length (Km)	Capacity (mmcf/d)
Tarek-Amerya	Tarek	Amerya	231	950
Obaiyed-Tarek	Obaiyed/ Salam Connector	Tarek	49.5	600
Obaiyed Spurline	Obaiyed	Obaiyed/ Salam Connector	41.5	480
Salam Spurline	Salam (Pre-2021)		35	250
Qasr-Shams	Qasr (Pre-2021)	Shams (Pre-2021)	40	350
Shams-Obaiyed	Shams (Pre-2021)	Obaiyed	42	240
Salam-Matruh Terminal	Salam (Pre-2021)	Matruh	75	22

Meanwhile, the Badr El Din and Abu Gharadig in the Western Desert region comprise a network of four natural gas pipelines with a total length of 1,007.13 km and a total diameter of 78 inches.

These pipelines collectively possess a capacity of 667 mmcf/d. The Salam-Abu Gharadig pipeline has the largest capacity of about 187 mmcf/d, according to Wood Mackenzie.

Pipeline	From	To	Length (Km)	Capacity (mmcf/d)
Badr El Din-Amerya (1)	Badr El Din Fields	Amerya	267.74	180
Badr El Din-Amerya (2)			267.39	150
Abu Gharadig-Dashour (1)	Abu Gharadig (Pre-2021)	Dashour	260	150
Salam-Abu Gharadig	Salam (Pre-2021)	Abu Gharadig (Pre-2021)	212	187

MAJOR TRADE PIPELINES

Arab Gas Pipeline (AGP)

AGP is a trans-regional natural gas pipeline that carries natural gas through Egypt, Syria, Jordan, and Lebanon with an ultimate capacity of 10 billion cubic meters per year (bcm/y), according to the Jordanian Ministry of Energy and Mineral Resources. Egypt considers the AGP a remarkable strategic and economic Arab cooperation between Egypt and other countries.

The pipeline was attacked repeatedly between 2011 and 2018, leading to stoppages of gas exports, but it was brought back later. In 2020, the AGP reversed to deliver Israeli natural gas to Jordan's National Electric Power Company at around 300 mmcf/d. Moreover, since 2022, Israeli gas has flowed through the pipeline to Egypt to meet growing domestic demand and take advantage of high LNG prices, as stated by Wood Mackenzie.

In June 2022, Egypt signed an agreement with Lebanon to supply 23 billion cubic feet per year (bcf/y) of natural gas from Egypt to Lebanon via Syria and Jordan using the Jordanian segment of the AGP, according to the US Energy Information Administration (EIA). The agreement's implementation was hindered due to the US Sanctions on Syria.

AGP HIGHLIGHTS*

*Last Update in November 2022

AGP comprised four construction phases. The first phase of the project involved a pipeline that carried Egyptian gas to Jordan. This prompted Jordan to start importing LNG at Aqaba in 2015. Exports resumed in 2018 at a rate of 50-100 mmcf/d and in 2019, an agreement was reached to supply an additional 250 mmcf/d on a variable and interruptible basis.

However, the second phase is operated on a build, own, operate, and transfer (BOOT) basis for 30 years to supply power stations at Rehab and Al Samra, as stated by Wood Mackenzie. The third phase involved extending the pipeline to run to the Jordan-Syria borders with initial gas sales estimated at 35.3 bcf/y. Lastly, the fourth phase in which Syria completed AGP to reach the city of Homs, with a diameter of 36 inches.

AGP CONSTRUCTION PHASES

	1st	2nd	3rd	4th
Starting Date	2003	2006	2007	2008
From	El-Arish (Egypt)	Aqaba (Egypt)	El-Rehab (Jordan)	Jordanian-Syrian Borders
To	Agaba (Jordan)	El-Rehab (Jordan)	Jordanian-Syrian Borders	Homs (Syria)
Length (km)	265	393	342	330
Capacity (mmcf/d)	965	640	100	-
Estimated Cost ($ million)	250	300-350	400	-

Arish-Ashkelon Pipeline

The Arish-Ashkelon pipeline, also referred to as the East Mediterranean Gas (EMG) Pipeline, was built in 2008 with the purpose of transporting natural gas from Egypt to Israel. It is important to note that this pipeline should not be confused with the East Mediterranean Gas (EastMed) pipeline, which is a proposed project intended to deliver natural gas from the fields in Israel and Cyprus to Greece.

In 2019, a new agreement was reached between Egypt and Israel to reverse the pipeline flows, enabling the delivery of natural gas from Israel's offshore fields to Egypt. This shift in direction marked a change in the pipeline's function and purpose. Gas imports from Israel started in early 2020. Contracted volumes are for 3 tcf to be purchased over a period up to 15 years, according to the EIA.

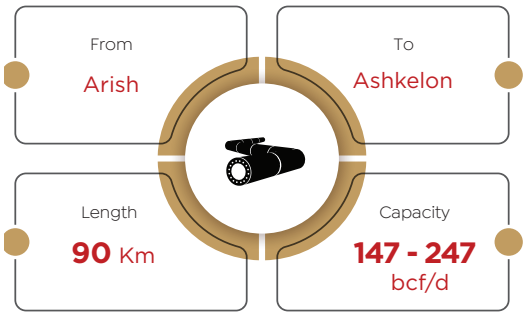
Within the framework of Israeli natural gas exports to Egypt, in June 2022, Israel, Egypt, and the European Union (EU) signed a landmark agreement during the ministerial meeting of the East Mediterranean Gas Forum (EMGF) in Cairo. The deal solidified plans for Israel to export its natural gas to the EU through Egypt, marking the first instance of such exports.

The agreement aims to boost LNG sales to EU countries, which are seeking to reduce their dependence on Russian gas supplies following Russia's invasion of Ukraine, as reported on EMGF website.

Chevron temporarily ceased its natural gas exports through the EMG pipeline in early October 2023 due to heightened conflict between Israel and militants in Gaza. To maintain gas exports, Chevron opted to utilize the FAJR pipeline, connecting Jordan and Egypt. The EMG pipeline is crucial for transporting gas from Chevron's Leviathan offshore gas field to Egypt. In response, Israel suspended production at the Tamar gas field and slightly reduced gas exports from the Leviathan field to prioritize the domestic market.

However, in early November, Israeli natural gas exports to Egypt have resumed after the temporary disruption, with the current flow undisclosed. This resumption is vital for Egypt, which relies on Israeli gas imports to meet domestic demand and generate foreign currency through re-exports, Reuters reported.

ARISH-ASHKELON PIPELINE HIGHLIGHTS



PIPELINE'S STAKEHOLDERS

*A joint venture involving Delek Drilling (now NewMed Energy), Nobel Energy (fully acquired by Chevron), and Dolphinus Holdings.

Proposed Nitzana Route

In May 2023, a new 65 km onshore gas pipeline from Israel to Egypt was approved. The pipeline would enable the export of an additional 580 mmcf/d of Israeli gas. The pipeline would run from the southern Negev region and the Egyptian grid near Nitzana.

This pipeline increases the possibility of exporting more gas from Israel through Egypt to European countries, according to the Israel National Digital Agency.

Egypt is strategically advancing its position as a key player in the global oil and gas trade by actively expanding its infrastructure. With a focus on enhancing export capabilities, Egypt is leveraging its natural resources to tap into European markets, particularly in the aftermath of the Russian-Ukrainian war. These efforts aim to attract additional investments, bolster the country's energy sector, and create new avenues for revenue generation.

Egypt's dedication to expanding and improving its natural gas pipeline infrastructure demonstrates its commitment to utilizing natural gas to secure its energy needs while embracing environmental sustainability. The country's strategic investments in pipeline development, coupled with its geographical advantage as a regional transit hub, position Egypt for continued success and prominence in the natural gas sector.

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