EGYPTIAN GAS ASSOCIATION
الجمعية المصرية للغاز



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EGYPT'S GAS NETWORK

A National Asset with Global Reach

Research Partner

EGYPT OIL&GAS
RESEARCH & ANALYSIS

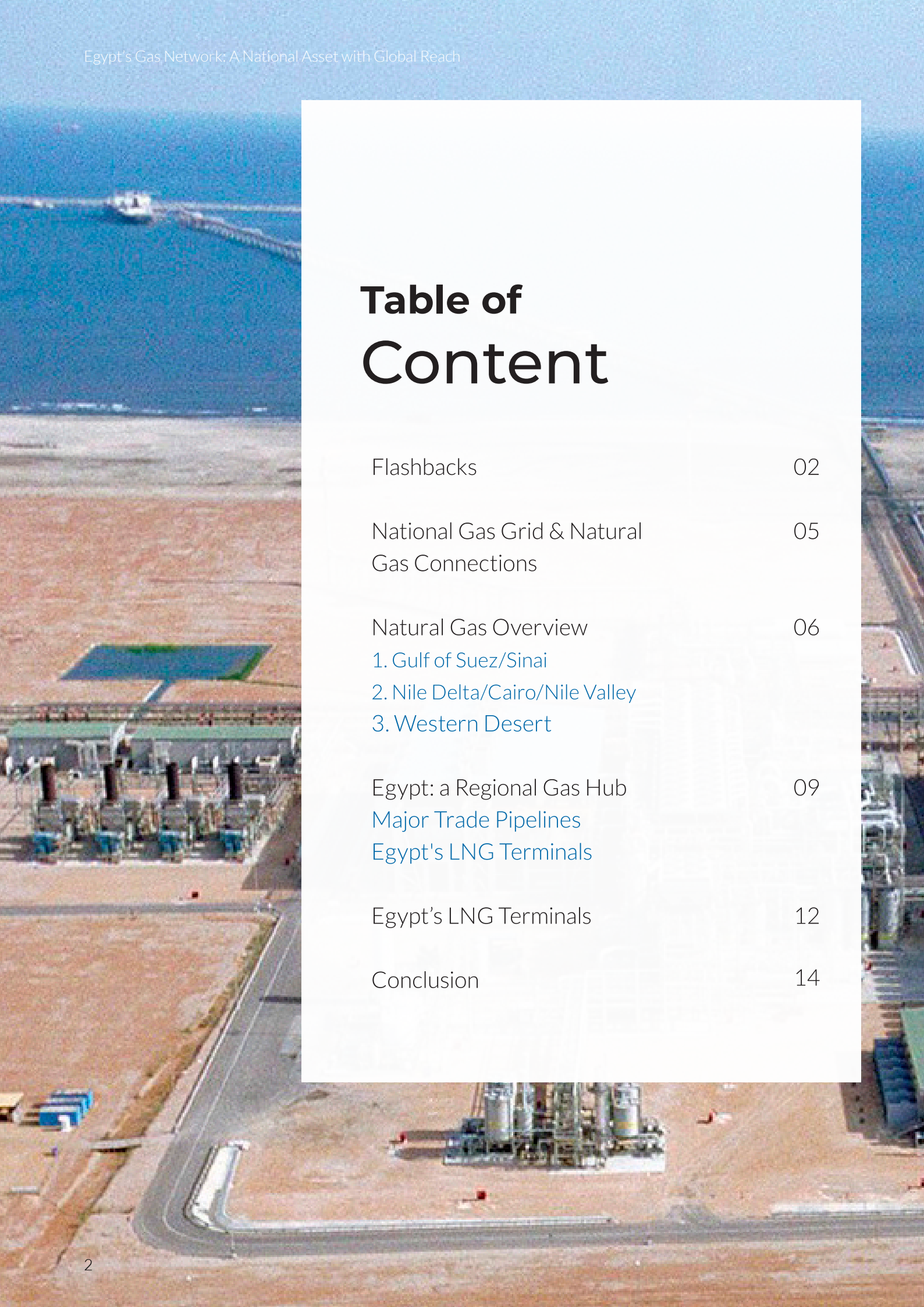


Table of Content

Flashbacks 02

National Gas Grid & Natural Gas Connections 05

Natural Gas Overview 06

1. Gulf of Suez/Sinai
2. Nile Delta/Cairo/Nile Valley
3. Western Desert

Egypt: a Regional Gas Hub 09

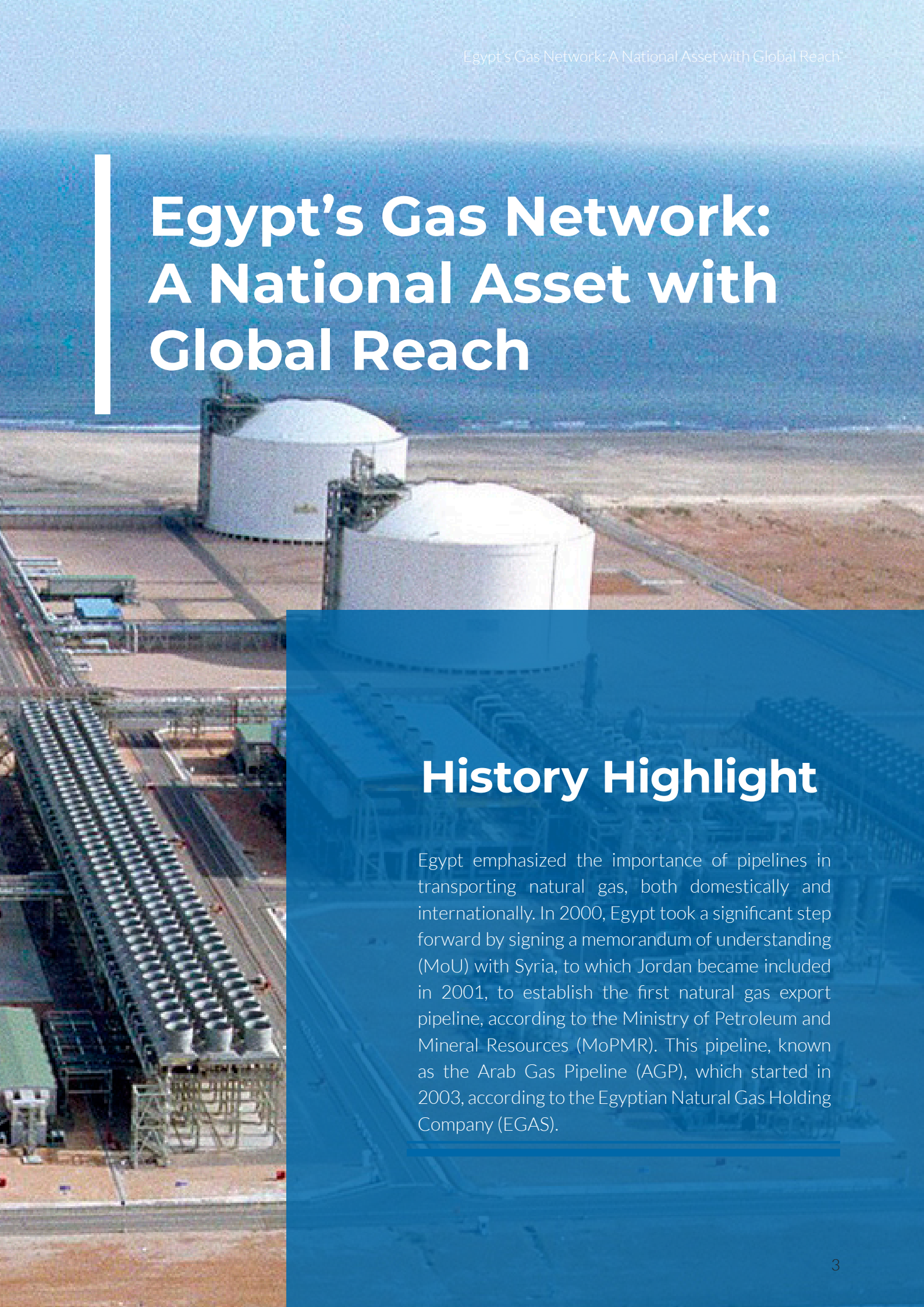
Major Trade Pipelines

Egypt's LNG Terminals

Egypt's LNG Terminals 12

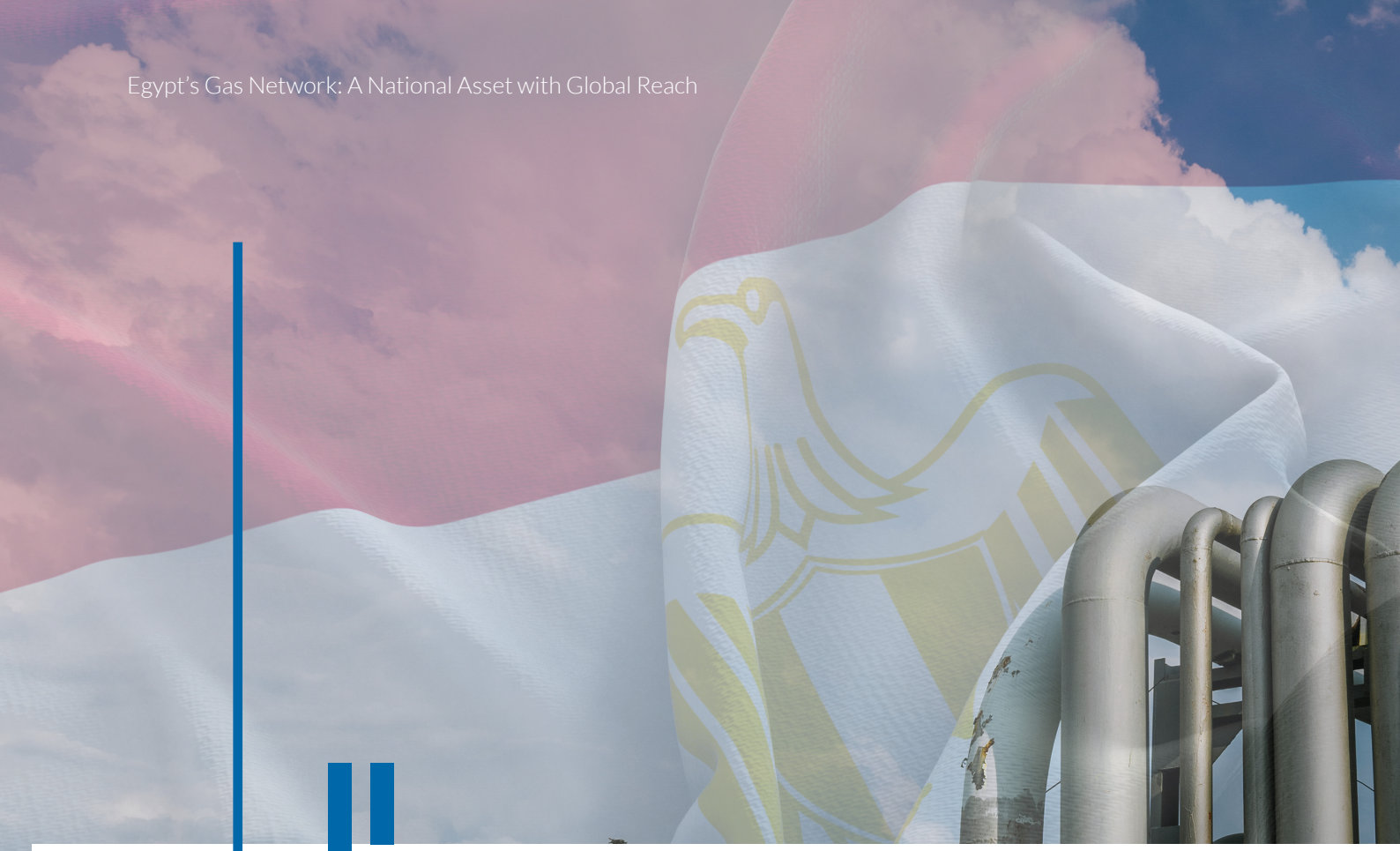
Conclusion 14

Egypt's Gas Network: A National Asset with Global Reach



History Highlight

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).

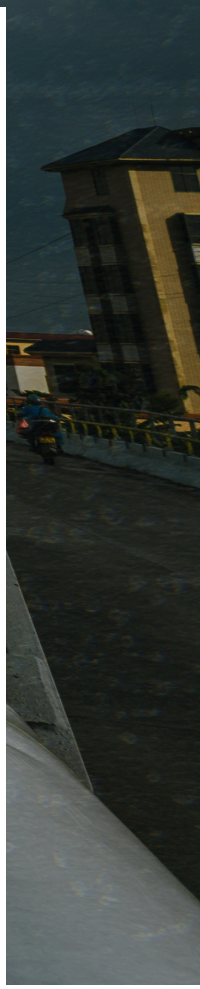


Egypt spares no efforts to avail natural gas as a transitional fuel; it has become a strategic priority in the energy transition. Natural Gas pipelines are a prerequisite for the deployment and maximization of the use of natural gas to cope with Egypt's ambitious economic and social development plans. 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. Additionally, it highlights Egypt's growing LNG capacities, positioning the country as a key player in global LNG trade.



National Gas Grid & Natural Gas Connections

Egypt's national gas grid spans an impressive about 100,000 km, playing a critical role in connecting over 14 million households to natural gas. This vast network has significantly reduced the reliance on butane cylinders, contributing to both enhanced energy efficiency and a substantial reduction in CO_2 emissions. This initiative supports the country's ongoing efforts toward environmental sustainability while providing cleaner, more reliable energy for millions of homes.

National Gas Grid
Length

about *100,000* km

Delivering Natural Gas to Households

+14
million
units

Residential Units

> 70
million
citizens

Beneficiaries

Reducing 1 mmt/y of co_2 emissions

Natural Gas Connections to Commercial Units

25,000

Connected Commercial Units

3,000

Connected Industrial Units

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	Suez	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	Abu Madi	Talkha Distribution Station	***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	Damanhur	***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	Korimat Power Station	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)	Obaiyed/ Salam Connector	***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)	Badr El Din Fields	Amerya	***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***



Egypt is a Regional GAS HUB

Through strategic investments in pipeline infrastructure and Liquified Natural Gas (LNG) terminals, Egypt has enhanced its capacity to transport natural gas regionally and globally. Such infrastructure development significantly eases the flow of natural gas across borders, fostering regional cooperation and integration, and positioning the country as a gas hub.

Major Trade Pipelines

Arab Gas Pipeline (AGP)

The Arab Gas Pipeline (AGP) is a trans-regional pipeline connecting Egypt, Syria, Jordan, and Lebanon, with a capacity of 10 bcm/y, according to the Jordanian Ministry of Energy. It is seen as a strategic economic collaboration between Egypt and neighboring countries.

Despite attacks between 2011 and 2018 that halted gas exports, the pipeline was restored. In 2020, the AGP began transporting Israeli natural gas to Jordan, and since 2022, Israeli gas has flowed to Egypt to meet domestic demand and benefit from high LNG prices. An agreement to supply Lebanon with Egyptian gas through the AGP was signed in 2022 but faced delays due to US sanctions on Syria.

AGP Highlights*

2004
Starting Year

EGAS, Enppi, Petrojet, GASCO & SPC
Operators

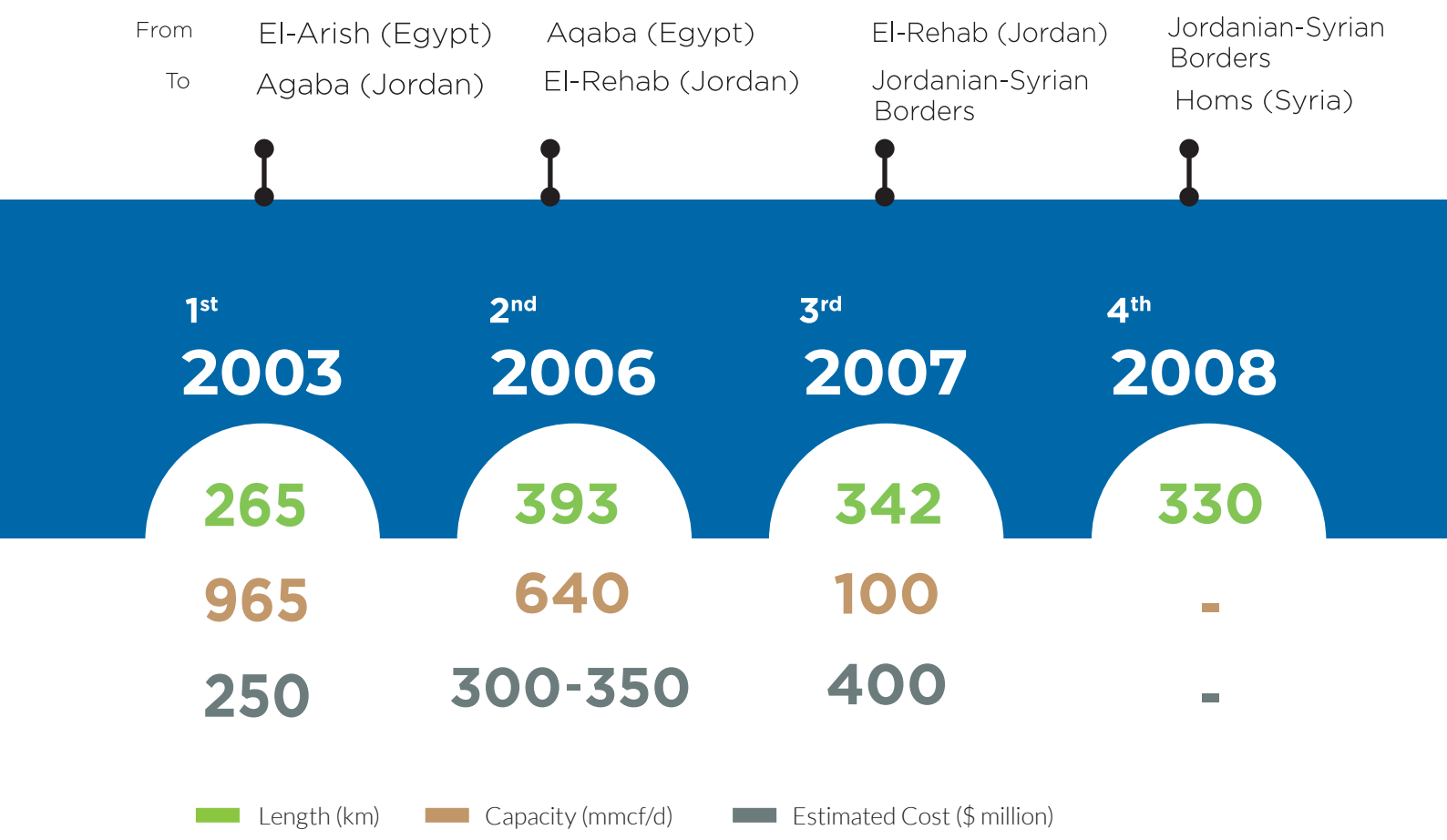
~1,207 km
Length

*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



Arish-Ashkelon Pipeline

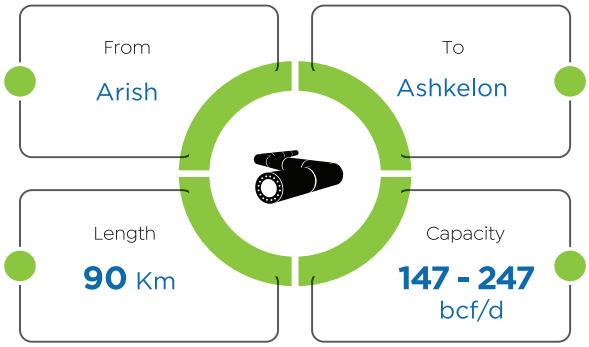
The Arish-Ashkelon pipeline, also referred to as the East Mediterranean Gas (EMG) Pipeline, was built in 2008 with the purpose of transporting natural gas from Egypt to Israel. It is important to note that this pipeline should not be confused with the East Mediterranean Gas (EastMed) pipeline, which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

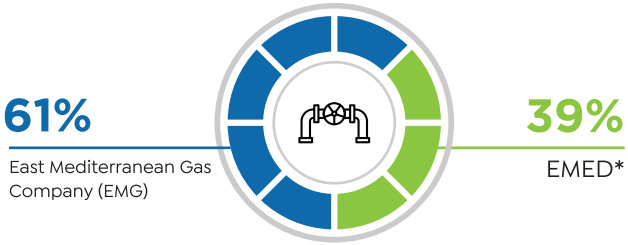
Within the framework of Israeli natural gas exports to Egypt, in June 2022, Israel, Egypt, and the European Union (EU) signed a landmark agreement during the ministerial meeting of the East Mediterranean Gas Forum (EMGF) in Cairo. The deal solidified plans for Israel to export its natural gas to the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

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's LNG Terminals

Egypt is poised to emerge as a regional leader and major exporter in the liquified natural gas (LNG) market. The country became one of the most attractive alternative routes for exporting natural gas to European countries. Accordingly, Egypt plays a crucial role in meeting global energy demands.

LNG terminals

Egypt possesses two of the **largest LNG terminals**

OPERATING SINCE **2004-2005**

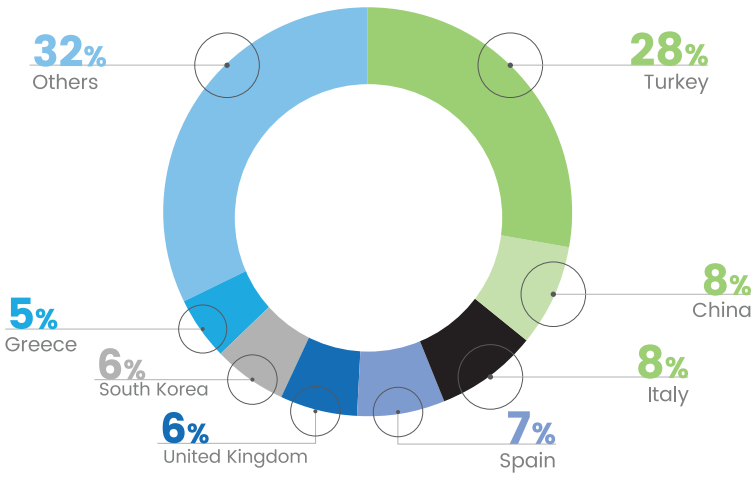
the Damietta LNG (DLNG) & **the Egyptian LNG (ELNG)**

plants with a TOTAL CAPACITY exceeding

> 13 mmt/y

In 2023, the DLNG and ELNG plants succeeded in producing and exporting the 500th and 1000th cargo of LNG, respectively, since they started operations. Egypt's total LNG exports volume hit 3.6 mmt in 2023, with five European nations leading, representing 54% of Egypt's LNG imports.

Exports



Source: Organization of Arab Petroleum Exporting Countries (OAPEC)



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. A key element of this strategy is Egypt's LNG terminal, designed for exporting and re-exporting LNG. This facility not only enhances Egypt's export capabilities but also reinforces its role as a regional gas hub.



Egypt's dedication to expanding and improving its natural gas pipeline infrastructure, along with the LNG terminal, demonstrates its commitment to utilizing natural gas to secure its energy needs while embracing environmental sustainability. The country's strategic investments in pipeline and LNG 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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