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Egypt's Major Fields:

Exploring the Oil and Gas Landscape

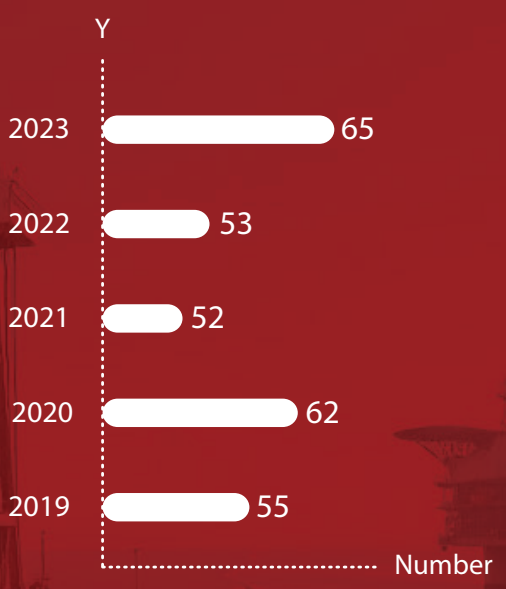
Egypt's Major Fields:

Exploring the Oil and Gas Landscape

BY MARIAM AHMED & MAHMOUD YASSER

Key Takeaways

Petroleum Discoveries



Discoveries (January-October 2024) **54**

WND Project's Phases

Phase	Fields	Wells
1st	Taurus & Libra	9
2nd	Giza & Fayoum	8
3rd	Raven	8
Later Phases	Maadi, Viper, Ruby, Polaris & Hodoa Discoveries	

Egypt is a geographically significant hydrocarbon producer. The Egyptian petroleum industry is committed to attracting investment in upstream activities to bridge the gap between supply and demand. In this regard, the sector recently experienced significant exploration activities, reflecting the considerable effort to finalize numerous petroleum agreements and enhance reserves growth.

There are 57 international companies currently engaged in Egypt's petroleum exploration and exploitation in various regions such as the Mediterranean Sea, Nile Delta, Western Desert, Eastern Desert, Sinai, and Upper Egypt. All activities are running under the supervision of the Ministry of Petroleum and Mineral Resources (MoPMR) and its affiliated companies.

Between 2019 and 2023, Egypt successfully signed a total of 66 exploration and production agreements with international oil companies (IOCs) to accelerate discoveries and boost production. The report highlights trends in petroleum discoveries in Egypt, showcasing the largest oil and gas fields as well as the ongoing development projects.

PETROLEUM DISCOVERIES

Egypt's petroleum sector achieved a total of 287 natural gas and oil discoveries from 2019 to 2023. Despite some fluctuations, including a significant drop in 2021, the overall trend remains positive.

In 2019, there were 55 petroleum discoveries, which increased by 12.7% in 2020 to reach 62, mainly due to more oil finds. Notable milestones include the BOLT-150 discovery in the Western Desert.

In 2021, the number of discoveries dropped slightly to 52, primarily due to disruptions caused by the COVID-19 pandemic, which delayed drilling operations and reduced foreign investments in exploration. Despite this, exploration activities persisted in key regions like the Western Desert and the Gulf of Suez.

Several wells like Sidri-36 continued to contribute significantly to reserve additions, demonstrating resilience amid challenging circumstances.

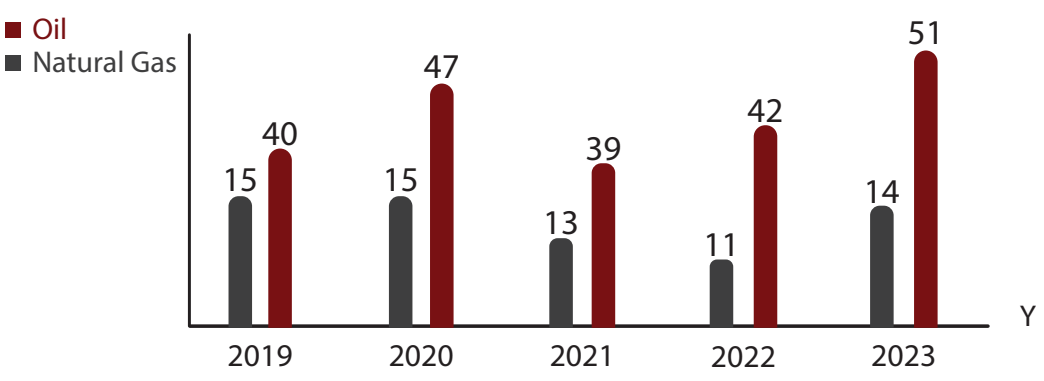
In 2022, Egypt's discoveries slightly increased to 53, including the oil discovery in the northeastern region of Ramadan, as one of the largest regional finds in decades in the Gulf of Suez. The first expected oil stock for this discovery is about 100 million barrels (mmbbl). Additionally, a new gas discovery at the exploration well SD-5X, in the South Disouq development concession was announced.

In 2023, Egypt's petroleum sector achieved a record 65 discoveries, a 22.6% increase from 2022, reflecting the success of advanced exploration strategies and intensified searching activities.

2023 witnessed notable discoveries, including the NSG-3 well at the East Damanhour Block in June. This is in addition to discovering ED-2X well in the Abu Madi Reservoir in January.

During the first ten months of 2024, Egypt recorded 54 new petroleum discoveries, adding approximately 71 million barrels (mmbbl) of crude oil and 680 billion cubic feet (bcf) of natural gas to reserves. These discoveries underscore the effectiveness of ongoing exploration strategies across key producing regions. For instance, a new significant discovery in the West Fewebs-1 area in the Western Desert was reported, according to the MoPMR.

Petroleum Discoveries



GIANT NATURAL GAS FIELDS

Egypt's vast natural gas fields and hydrocarbon resources have allowed it to play a key role in the global energy landscape. It has achieved significant discoveries over the past decade, including the landmark Zohr gas field.

The country's extensive reserves, located primarily in the Nile Delta and the Mediterranean Sea, are complemented by a growing infrastructure that supports exploration and production.

Petroleum Discoveries in the First Ten Months of 2024

OIL

40

NATURAL GAS

14

Major Fields Overview

Field	Location	Discovery Date	Production Starting Date	Reserves (tcf)	Investments ($ billion)	Operator
Zohr	Mediterranean Sea	August 2015	December 2017	30	12	Petrobel
WND		2000 Discovering the 1st Field	May 2017	5	9	bp Egypt
Nooros	Nile Delta	July 2015	September 2015	4	0.29	Petrobel
Atoll	East Nile Delta	2015	February 2018	1.5	3	PhPC
Nargis	Mediterranean Sea	December 2022	2025	3.5	3	Chevron

Zohr

Super-giant Zohr gas field was discovered in the Mediterranean deep waters by Eni. Zohr field is one of the largest gas discoveries ever made in the Mediterranean Sea with conservative estimated reserves of 30 trillion cubic feet (tcf) of natural gas when discovered.

Zohr 1X NFW well was discovered and drilled at 4,757 feet (ft) of water depth (1,450 meters) in the Shorouk Block, 190 kilometers (km) north of Port Said. Eni holds 50% of the development, 30% belongs to Rosneft, 10% to Mubadala Petroleum, and bp owns 10%, as explained on Eni's website.

December 2017 marked the start of production from the Zohr field, a record time for this type of deepwater field of less than two and half years. The first production unit added 800 million cubic feet per day (mmcf/d).

In April 2018, the second production unit contributed 1.1 billion cubic feet per day (bcf/d), and then in May of the same year, the field's production slightly increased to reach 1.2 bcf/d, following the addition of the third production unit, according to Eni's website.

The sixth and seventh production units were introduced during the first quarter of 2019, leading to a production milestone of 2.7 bcf/d in August 2019. In FY 2022/23, the field's production rates have declined to 2.4 bcf/d of natural Gas and 3,700 barrels per day (bbl/d) of condensates.

The Egyptian Cabinet announced in July 2023 that the total investment in the offshore gas field is targeted to reach $15 billion in three years.

There are plans to develop the Zohr gas field including the drilling and completion of 20 wells. This is in addition to investing over $677 million in the field in fiscal year (FY) 2023/24, with plans to drill two new wells in Q1 2025. These plans aim to boost the field's production rates, which amounted to about 2 bcf/d of gas, as announced by the MoPMR in October 2024.

Eni's Investments in Zohr Field Development*

$13.5 billion

*Announced in July 2023

WND Project

The West Nile Delta (WND) Project includes a total of five natural gas fields across the North Alexandria and West Mediterranean Deep Water offshore concessions in the Mediterranean Sea, approximately 65 to 85 km off the coast of Alexandria.

It is planned to deliver the project in three stages. This $9 billion project contains around 5 tcf of gas resources, as stated on bp's website.

WND project's first phase was developed to deliver an annual average of more than 600 million standard cubic feet of gas a day (mmscf/d) to the Egyptian national gas grid. The second stage's peak production was set to reach about 700 mmcf/d of gad.

The third stage of the project has the potential to produce 900 mmscf/d of gas and 30,000 bbl/d of condensates, according to bp's website.

This is set to be achieved through drilling 8 new offshore wells and establishing onshore treatment facilities, according to the Offshore Technology website.

The three stages combined production was estimated to reach 1.4 bcf/d, representing a considerable share of Egypt's current natural gas production, which will be fed into the natural gas grid, as explained on bp's website.

WND Project's Phases

First Phase	
Fields	Taurus & Libra
Wells	9
Production Start	May 2017

Second Phase	
Fields	Giza & Fayoum
Wells	8
Production Start	February 2019

Third Phase	
Fields	Raven
Wells	8
Production Start	April 2021

Later Phases
Maadi, Viper, Ruby, Polaris & Hodoa Discoveries

bp is the project's operator and has an 82.75% stake in the WND development, with Wintershall Dea holding the remaining 17.25% interest, according to a bp press release.

It should be noted that there is ongoing work in drilling two new wells to produce natural gas from the Raven Field, with investments of $700 million, to produce 200 mmcf/d, as part of the work to develop natural gas resources in the producing field in the Mediterranean Sea, according to the MoPMR.

Nooros

Nooros Development Project

Nooros discovery is located in the Abu Madi West license in the Nile Delta, 120 km northeast of Alexandria, which was brought on stream two months later. In the meantime, the preliminary estimates of the discovery accounted for a potential of 15 billion cubic meters (bcm) of gas in place with upside, plus associated condensates, according to Eni's website.

Investments **$290** million

Wells **15**

In May 2017, a new milestone was achieved. Nooros field production exceeded 1.1 bcf/d for the first time in the history of the Nile Delta region after finishing the drilling and completing the development well Nidco (West-4). The natural gas produced from the field's operational wells is sent to Abu Madi, located 25 km from the discovery, to be treated and then added to the national grid.

The new development well Nidoco north-west 7 was brought online in May 2018, with a production rate of about 180 million cubic feet (mmcf) of gas and 1,500 barrels (bbl) of condensates per day, according to the MoPMR.

It is worth noting that in September 2020, Eni made a new natural gas discovery at Nooros with Nidoco NW-1 well, located at 16 meters of water depth, 4 km north of the Nooros field. The discovery brought the field's estimated reservoir to more than 4 tcf of gas, according to Eni's statement.

Atoll

The Atoll Field was discovered in the North Damietta Offshore Concession in the East Nile Delta, offshore Egypt, and commenced production in 2018. The Atoll discovery is 100% owned by bp and is operated by the Pharaonic Petroleum Company (PhPC), bp's joint venture with the Egyptian Natural Gas Holding Company (EGAS) and Eni. Atoll is a significant natural gas discovery, with a reservoir estimated to contain 1.5 tcf of gas.

The field's initial production phase began production in February 2018, producing 350 mmscf/d, according to the bp website.

First Phase Details

Investments

$1 billion

Involved Operations

- Recompleting the original exploration as well as a producing well
- Drilling 2 additional production wells

In November 2020, bp commenced production from the Atoll-4 well which reached 105 mmcf/d of natural gas and 3,500 bbl of condensates. The Atoll-4 well was connected to the existing Atoll facilities, sustaining the field's production capacity at approximately 360 mmscf/d.

All produced gas is supplied to the Egyptian national grid, according to bp.

In 2022, PhPC expanded Atoll's processing facilities with a $43 million investment, aimed at recovering 5 million metric tons per year (mmt/y) of burnt gasses.

The field is expected to continue producing until it reaches its economic limit in 2050. In 2023, the field produced around 325 mmcf/d, accounting for approximately 3% of Egypt's daily natural gas output.

Nargis

Chevron announced a major discovery in the Nargis Offshore Area Concession, in the Eastern Mediterranean Sea, with an estimated natural gas reservoir of about 3.5 tcf. The Nargis Offshore Area Concession spans 445,000 acres, according to the MoPMR.

In January 2023, Eni reported another significant gas discovery at the Nargis-1 exploration well. This well, situated within the Nargis Offshore Area Concession, encountered approximately 200 ft (61 meters) of gas-bearing sandstones from the Miocene and Oligocene formations. The well was drilled by the Stena Forth drillship at a water depth of 1,014 ft, as stated on Eni's website.

Chevron operates the field with a 45% interest, while the International Egyptian Oil Company (IEOC), a subsidiary of Eni, also holds a 45% stake. Tharwa Petroleum Company has the remaining 10% interest. This partnership marks a significant step in unlocking Egypt's offshore gas potential, as stated on Eni's website.

PROMINENT OIL FIELDS

Meleiha

Meleiha is a collection of 16 oil and gas fields in the Western Desert. The major phases of exploration occurred in the 1980s. Development was initiated in 1986 by Eni under its joint venture company with the Egyptian General Petroleum Corporation (EGPC), Agiba Petroleum Company. Since then, a large number of discoveries have been developed and an extensive drilling campaign has been undertaken.

The prominent discoveries are the Emry Deep exploration prospect and Zarif-1X well, as stated by Wood Mackenzie.

Field	Location	Operator
Meleiha	Western Desert	Agiba Petroleum Company
Alamein/Yidma Development Lease	Western Desert	IPR Energy Group
Abu Rudeis	Gulf of Suez	Petrobel

Eni announced in 2020 the successful drilling of the SWM-A-6X well, in the South-West Meleiha development and exploration concession with daily production of 5,000 bbl/d of crude oil. It should be noted that the production from South West Meleiha Concession began in July 2019 and in just one year ramped up to 12,000 bbl/d thanks to the contribution of discoveries, according to Eni's press release.

In June 2021, Eni agreed with EGPC and Lukoil about the merger of the concessions of Meleiha and Meleiha Deep that there would be an extension to 2036, with the possibility of reaching further to 2041. In this regard, the Meleiha concession is operated by Agiba, and Eni through its subsidiary IEOC which holds a 76% interest, while Lukoil holds a 24% interest.

In October 2021, three discoveries in the Meleiha and South West Meleiha concessions were announced through the Jasmine W-1X and MWD-21 wells, while in the South West Meleiha exploration concession, the discovery was made through the SWM-4X well. The discoveries added more than 6,000 barrels of equivalent oil per day (bbloe/d) to the production.

Eni announced in April 2022 new oil and gas discoveries in the Meleiha concessions for approximately 8,500 bbloe/d through drilling Nada E Deep 1X well, Meleiha SE Deep 1X well, and Emry Deep 21 well, as stated on Eni's website.

Alamein/Yidma Development Lease

The Alamein/Yidma Block is located in the Western Desert and consists of three active fields: Alamein, Yidma, and Zain. Phillips Petroleum discovered Alamein in 1966 and commenced production two years later, while Yidma was found in 1971 and began producing in the same year. Zain was discovered in November 2008 and started production one month later.

In August 1993, the Improved Petroleum Recovery (IPR) Group of Companies acquired the block from Phillips Petroleum, and the WEPCO joint venture (EGPC 50%, IPR 50%) was set up to operate the fields, according to Wood Mackenzie.

IPR Energy Group has announced a major discovery in the Alamein/Yidma Concession in August 2023. The Alamein 48-K well was drilled to a depth of 8,960 f utilizing the IPR-1 750 HP Drilling Rig, at a total cost of $1.55 million, with an average production rate of 3,300 barrels of oil per day, as announced in the IPR press release.

In January 2024, IPR announced the discovery of exploration well West AY-1X and the successful testing and production from a new formation (Kharita) in Alamein-44, adding an incremental 2,850 bbl/d of oil to the Yidma-Alamein Western Desert Development Lease. West AY-1X was drilled to a depth of 13,166 ft, utilizing a 1500 HP drilling rig, as stated in the IPR press release.

Abu Rudeis

The Abu Rudeis Sidri field is located on the eastern coast of the Gulf of Suez. Exploration started in the Abu Rudeis region in the late 1940s, drilling a total of 35 wells in the Abu Rudeis/Sidri development lease. Significant recent discoveries include the Sidri-23 well and the Sidri-36 in 2019, operated by Petrobel, a company equally owned by Eni and EGPC.

In July 2019, Eni announced the discovery of Sidri-23 in the Sidri area. The discovery nearly holds up to 200 mmbbl of oil in place. The well has been completed and brought on stream. The Sidri-23 discovery was a key addition for Petrobel, strengthening the Gulf of Suez as an oil-producing region, according to Eni's website.

Sidri-36 appraisal well emerged as a significant oil discovery in the Gulf of Suez in October 2019, with an initial flow rate of about 5,000 bbl/d, according to Eni's statement.

MAJOR ON-GOING DEVELOPMENT PROJECTS

The Egyptian state spares no efforts to increase natural gas and oil production through continuing efforts to develop producing fields, and intensive exploration activities all over Egypt.

This is supported by applying seismic technology, drilling, and reservoir modeling to ensure achieving successful discoveries.

WDDM Concession Development

Work is underway to develop the tenth phase of gas production from the West Delta Deep Marine (WDDM) Project in the Mediterranean Sea.

In July 2023, Shell Egypt, and its partners; EGAS, EGPC, and Petronas signed an agreement to commence development of the 10th phase (phase 10), including drilling 3 wells, as stated in Shell's press release.
In April 2024, Shell Egypt and its partners agreed to start the 11th development phase, deploying the Scaraboe 9 offshore drilling rig to drill another 3 wells, according to the EGYPES website.

Developing Geisum & Tawila West Region

The MoPMR and EGPC signed a landmark agreement with Cheiron Energy and KUFPEC companies in July 2024 to develop the Geisum and Tawila West region in the Gulf of Suez.

The agreement's main aim is to pump new investments for boosting development operations, increasing production rates, and expanding research and exploration, according to the MoPMR.

Moreover, in August 2023, a major oil discovery was made in the Geisum and Tawila West region via the GNN-11 exploration well, operated by PetroGulf Egypt.
The well encountered 165 ft of high-quality strata in the Nubian Formation, marking the first discovery of the Nuba Crude Oil-Bearing Formation in the area.

This led to a 475% increase in production at North Geisum, with the current output reaching 23,000 bbl/d, compared to the pre-development level of 4,000 bbl/d, according to Cheiron Website.

Project's Details

Investments **$120** million

Wells **9** Including **3** Exploratory

Production Increase From **21,000** to **26,000** bbl/d

North Geisum Production Milestones

GNN-11 Well Contribution	Pre-development Production	Current Production*
2,500 bbl/d	4,000 bbl/d	23,000 bbl/d

*Announced in August 2023

North Safa & Al-Wasl Fields

GUPCO announced in July 2024 the drilling of new developmental wells in the fields of North Safa and Al-Wasl in the Northeast Ramadan concession area to increase the oil stock to more than 100 mmbbl. This development project is implemented through a consortium including Enppi, Petrojet, and Petroleum Marine Services (PMS), according to the MoPMR.

Project's Details

Investments

$229 million

Wells

5 Development Wells

Production Increase

To **15,000** bbl/d

North El Dabaa Block

In November 2024, Chevron commenced drilling a new well on the North El Dabaa block. The North El Dabaa (H4) Block lies about 10 kilometers offshore the Egyptian Mediterranean shore at water depths ranging between 100 and 3,000 meters, according to the MoPMR.

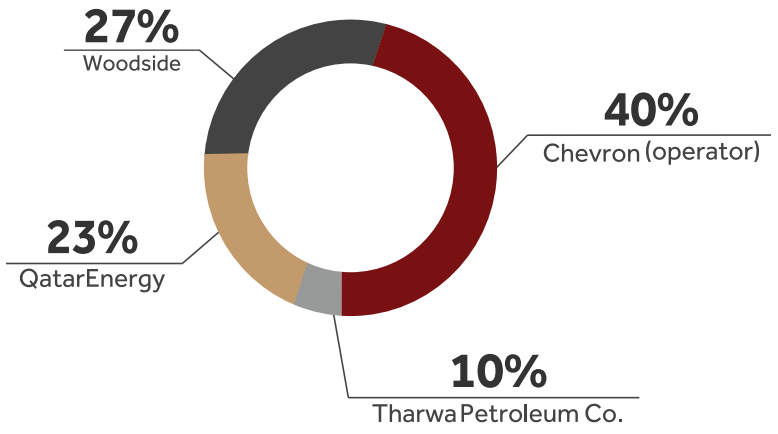
It should be noted that during the same month, QatarEnergy agreed with Chevron to acquire a 23% working interest (WI) in the concession agreement for the North El Dabaa Block, as stated on the QatarEnergy website.

Underdevelopment Well



Khendjer-1

New Concession's Structure





Egypt's strategic geographic location and substantial hydrocarbon reserves have positioned the nation as a significant player in the global energy landscape. The exploration and development of major natural gas fields, such as Zohr and the WND project, have significantly bolstered the country's gas production and export capabilities.

Simultaneously, the continued exploration and development of oil fields, including Meleiha and Alamein/Yidma, have ensured a steady supply of crude oil.

The Egyptian government's proactive approach to attracting foreign investment, streamlining regulatory frameworks, and fostering a conducive business environment has been instrumental in driving this growth. As Egypt solidifies its position as a regional energy hub, the petroleum sector is poised to play a pivotal role in shaping the nation's economic future.

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