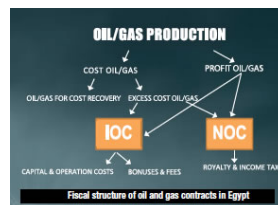


## Overview Of Egypt's Upstream Sector

Corporate Overview

### Egypt's Hydrocarbon Reserves

There are three major hydrocarbon-producing regions in Egypt: the Gulf of Suez, the Nile Delta, the Mediterranean, and the Western Desert. As of January 1st 2014, the country is estimated to hold 3.36 billion barrels (BCF) of technical liquid (oil and condensates/NGL) contracted reserves, 2.71 billion barrels of them commercial (on-stream or under development). Technical gas reserves total 53 Trillion Cubic Feet (TCF), 28 TCF of them are commercial (contacted). Gas comprises 64% of commercial reserves on an oil equivalent basis, 22% of the reserves are made up of oil and 6% of other liquids, according to a 2013 Wood Mackenzie report provided by EGPC.



The share of gas reserves is expected to grow thanks to discoveries in the Mediterranean and the Western Desert. Especially deeper, unexplored Oligocene plays offer strong potential for new finds, such as BP's recent Salamat discovery. Recent oil discoveries on the other hand have been modest, especially compared to the giant finds made at the Gulf of Suez in the 1950s-1970s. Considering the maturity of the Gulf of Suez, oil reserves will probably grow as a result of applying secondary and enhanced recovery techniques to existing fields rather than through exploration.

### Licensing and Production Sharing Agreements

In Egypt, international oil and gas companies (IOCs) can participate in hydrocarbon production via production sharing agreements (PSAs), which stipulate that IOCs pay all expenses, partially to be recovered afterwards. IOCs sign PSAs with national oil and gas companies (NOCs). There are three NOCs in Egypt:

1. Egyptian General Petroleum Corporation (EGPC), established as the General Petroleum Company in 1956, manages the oil industry—licensing, exploration, production, refining, transportation as well as marketing.
2. Egyptian Natural Gas Holding Company (EGAS) was established in 2001 to stimulate the development of the gas sector, while giving EGPC the opportunity to focus on declining oil production.
3. Ganoub El Wadi Petroleum Holding Company (GANOPE) was established in 2003 to spur exploration and production in Upper Egypt, which has many under-explored basins.

Until 2003, EGPC was responsible for all licensing. Since then, EGPC, EGAS and GANOPE offer their own bid rounds. EGAS licenses gas-prone areas in the Nile Delta and the Mediterranean and GANOPE licenses acreage in Upper Egypt and the Red Sea, whereas EGPC awards blocks at the Gulf of Suez and the Western Desert.

Exploration licenses given by EGPC, EGAS or GANOPE give the IOC the right to explore for hydrocarbons in specified concessions. There are several biddable parameters. EGPC has traditionally taken most into account parameters like minimum work commitment and profit oil-gas split. Nevertheless, the latest licensing round indicated growing importance of signature bonuses.

The contract period of seven to nine years is divided into three phases. The IOC must give up 25% of the area at the end of the first and the second phase. At the end of the third phase, the IOC must relinquish the remaining area; except the zones that have been converted into development leases. Since 2001, the IOCs have had to assign USD 50,000 per year to EGPC during the exploration period for training of Egyptian nationals. They also have a commitment to give preference for Egyptian nationals when employing staff.

In case of a commercial discovery, a PSA is drafted and a non-profit joint venture company is established, in which the IOC has a 50% stake but whose expenses are covered by the IOC. Before the issue of a development license, a period of delineation and assessment is permitted up to one year after commercial oil, and two years after commercial gas is discovered. An oil development license is usually granted for 20 years, with one optional five-year extension. A gas development license is granted for 25 years.

Fiscal terms of upstream PSAs:

- Bonuses and fees. A signature bonus, normally ranging from USD 0.5 million to USD 5 million, is payable upon the law that approves the PSA coming into effect. Production bonuses are paid upon average daily production reaching certain thresholds. Their level depends on production volume, and indicative payments range from USD 2 million to 6 million in recent contracts. Since 2001, there exist also development lease payments due upon the approval of development licenses for each block, and an extension payment due upon approval of a five-year extension to a development license.

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- Cost recovery. The cost oil/gas limit—a percentage of production that the IOC can use to recover its costs—has been made negotiable since 2001, but is usually not higher than 40%. Exploration and development costs are recoverable at 20-25% per year, whereas operating costs can be recovered in the year they were made. The excess cost oil/gas, which emerges in case of higher-than-expected production, is divided between the NOC and the IOC based on a ratio that is biddable since 2001.
- Profit oil/gas split. Since 2001, the IOC is entitled to 15-30% of profit oil/gas, i.e. the production left after cost recovery, with the rest belonging to the NOC. 30% applies when the output is below 10,000 b/d in case of oil and under 50 MMCF/d in case of gas/LPG. If it exceeds 100,000 b/d or 500 MMCF /d, the IOC's share is 15%. Under the domestic market obligation, the NOC has priority over other customers to purchase the IOCs share of oil/gas.
- Product pricing. EGPC is entitled to buy oil and condensates at a USD 0.95 per bbl discount to the export price. Gas purchase prices since 2001 are typically linked to Brent and subject to a price floor and a ceiling, with a few projects still retaining the former link to the Gulf of Suez Blend crude. Currently, the floor price is set at USD 2.5 and the ceiling at USD 2.65 per MMBTU. For comparison, international hub prices range from USD 5 per MMBTU in the US to almost USD 20 per MMBTU in Asia. As of last year, the government sold gas to many energy intensive domestic industries at USD 4 per MMBTU, according to Daily News Egypt. In case of a commercial gas discovery, the NOC will



profits from the project—is paid by the NOC on behalf of the IOC. There are no additional profit taxes, nor environmental or social development levies in Egypt. IOCs are exempt from sales taxes and export/import duties.

As for downstream fiscal terms, pipeline costs are included in upstream expenses and recovered as other capital expenditures. Generally, the IOC is entitled to use the pipelines it has constructed, but the government can authorize a third party to exploit them. Egypt's LNG plants are tolling facilities. The IOC builds, owns and operates a LNG plant in return for a processing tariff from which it recovers its costs and makes return. Its upstream supply partners retain ownership of LNG.

### The Past, Present, and Future of Egypt's Hydrocarbon Production

#### First Steps in Developing the New Industry

Egypt saw its first oil exploration in 1860. The first field discovered in 1869 was named Gemsa at the Gulf of Suez and started yielding oil in 1910. The Anglo Egyptian Oilfields, a joint venture company, was established by British Petroleum (BP) and Royal Dutch Shell (Shell) to develop the field. Several other fields were discovered in the following years by a number of companies and the government's Department of Mines.

As anti-foreign sentiment in Egypt grew towards the middle of the century, the award of new leases was restricted to companies where Egyptian nationals had at least a 51% stake. Consequently, exploration drilling ceased completely by 1951.

This prompted the government to lift the restriction, and main terms of concession agreements were included in the law in 1953. These set royalty at 10% in the Western Desert and at 15% in other areas, and income tax at 17%. As a result, companies commenced exploration again. In 1956, an Egyptian state oil company called "General Petroleum Authority" was set up to carry out exploration on behalf of the state. It was renamed as Egyptian General Petroleum Corporation in 1962.

#### Regulatory Changes to Stimulate the Sector

In 1962, Anglo Egyptian Oilfields was nationalized. However, a year later, EGPC started setting up joint ventures with private companies in order to encourage foreign participation. The first partners in joint ventures—where EGPC had a 50% stake—were Eni, the American Oil Company (Amoco, which merged with BP in 1998), and Phillips.

In 1973, EGPC introduced production sharing agreements, and existing joint ventures converted to these as well. According to PSA terms, cost oil/gas limit was 25-40%, with 10-25% of exploration costs covered per year and EGPC entitled to any excess. IOCs were entitled to 15-20% of profit oil/gas. Exploitation licenses normally lasted for 20 years, with an option for a 10-year extension. In 1983, a gas clause was introduced, which entitled IOCs to 25-36% of production. The overall terms of PSAs were changed slightly three years later to encourage exploration further. Among other changes, excess cost oil/gas was to be divided between EGPC and IOCs on the basis of profit split. In 1993, IOCs maximum share of profit oil increased to 25%. In 2001, EGAS was established in order to stimulate the growth of gas sector.

#### Giant Discoveries, Exploration, and Production Boom

Thanks to the new policies, the activity of IOCs in Egypt increased considerably and some giant discoveries were made, in particular Morgan (1965), July (1973), Ramadan (1974), and October (1977) by Amoco at the Gulf of Suez. Shell's promising Badr El Din and Abu Sennan discoveries in the Western Desert in 1981, alongside with the high oil prices of early 1980s, created an exploration boom that lasted throughout the decade. The 1990s saw a series of successful licensing rounds as well, which resulted in most of Egypt's hydrocarbon-potential geography being licensed.

a result of the giant discoveries, liquids production saw immense growth from 1975 to 1985. Oil output reached its historical peak in 1993. On that year, the average production was 912,000 bbls/d, about three times more compared to 1975.

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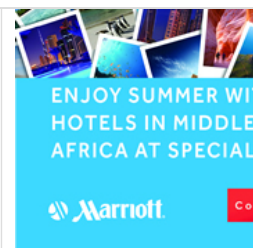
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Gas production also experienced considerable growth throughout the four decades after Eni discovered Egypt's first gas field, Abu Madi, in the Nile Delta in 1967. The growth quickened markedly in the 2000s, supported by rapidly increasing domestic demand and the sanctioning of gas exports in 2001, which led to the establishment of two LNG terminals. Egypt became the second largest gas producer in North Africa. The production peaked in 2009 at ca 6 BCF/d.

#### Production Trend Turns Downwards

Since 1993, Egypt's oil production has seen a downward trend. This is largely due to the fact that the Gulf of Suez fields, which have driven Egypt's oil production for decades, have become mature and less profitable. In early 2000s, BP managed to negotiate improved fiscal terms and a license extension for its GUPCO Merged Concession area at the Gulf of Suez, since it had otherwise become uneconomical to exploit further. Similarly, Eni re-negotiated the terms of its Belayim field license and extended its development lease to 2030.

Decline of the Gulf of Suez's oil output has been partly offset by that of the Western Desert, which saw rapid growth of activity in the 1990s, and by 2009 had become the largest producing area. Through acquisitions and extensive drilling in the 2000s, Apache became the key company operating there and the most active onshore driller in Egypt.



such regions. Besides, licensing is hampered by lengthy delays since awards need an approval by the parliament before any work can be carried out on acreage.

In addition to declining liquids production, activity in the gas sector decreased due to higher costs. As a result, the government started approving improved fiscal terms for the Mediterranean gas developments in 2008. Under the new terms BP and RWE Dea agreed with EGAS in 2010 for North Alexandria development, and the floor price was set at USD 3.0, with a ceiling price at USD 4.1 per MMBTU, corresponding to Brent oil prices of USD 75 and USD 100 per bbl respectively. Despite this, gas production began a downward trend in 2010.

As another blow to the hydrocarbon industry, in early 2011 several operators had to suspend drilling since expatriates were evacuated due to the January 25th Revolution. However, expatriates soon returned as the political situation stabilized somewhat and the normal level of activity recovered in the second half of the year, although no high-profile discoveries were made.

Despite changes on the top and resulting instability, there have been several bid rounds in recent years. EGPC launched another bid round in September 2011, where 11 blocks were awarded out of 15 on offer. TransGlobe Energy won four blocks and Shell three blocks, with other incumbents obtaining the remaining four. In 2012, EGAS and Ganoub El Wadi Petroleum Holding Company, GANOPE, organized bid rounds. As a result, EGAS managed to award eight blocks out of 15 on offer last year, with BP acquiring two, Edison & Petroceltic two, and Eni, Dana Gas, Sea Dragon as well as Pure Vida Energy a single block each. GANOPE awarded seven blocks out of 20 offered in Upper Egypt. In December 2013, four blocks were under negotiation, with one initial award made to Dragon Oil.

Also some significant discoveries have been made in recent years. In 2012 Apache was the most successful explorer, discovering 90 mmbbl of oil equivalent, much of it thanks to the Western Desert blocks it had purchased from BP in 2010. Eni's Emry Deep discovery in the Western Desert, estimated at 56 mmbbl, was the largest single oil find in 2012. BP/Eni made the largest gas discoveries with the Seth South and Taurt North deepwater fields in the Nile Delta estimated at 500 bcf in total. It is estimated that in the last year, drilling experienced a modest decline compared to 2012. Some smaller operators halted their plans due to political unrest and delayed payments. BP made the largest discovery of the year—the deepwater Salamat find in the Nile Delta that is estimated to contain up to 10 tcf of gas.

#### The Future Outlook Is Bleak

In the past decades, Egypt's hydrocarbon sector has been very successful thanks to low operating costs, reasonable financial terms and high drilling success rate (above 25% in the last 20 years). However, this success story has become to an end.

Whereas Egypt's oil output has been in decline for more than a decade already, falling gas production has also become a concern. Egypt still has large gas reserves in the Mediterranean, but the prices the government offers for IOCs for gas sales are not sufficient to undertake costly deepwater activities. Several projects have been delayed, including the vast North Alexandria development in the Mediterranean, for which BP did attain better fiscal terms a few years ago, but that again has become uneconomical to develop because the prices Egypt offers for gas have not kept pace with cost inflation. This is so because gas floor and ceiling prices are not lifted depending on the inflation under the current pricing formula, which was adopted in 2001 because high oil prices of that time made the previous formula disadvantageous for the government, as it did not set limits to the crude-indexed price.

At the same time that gas production is falling, its domestic consumption continues to grow at a fast pace, encouraged by energy subsidies. The consequence is a severe gas deficit, which has adversely affected Egypt's electricity and cement production as well as exports, which have fallen below agreed capacities.

Analysts believe that the government is forced to continue renegotiating the fiscal terms of PSAs for deepwater gas resources and mature oil assets in order to encourage IOCs to develop them. However,

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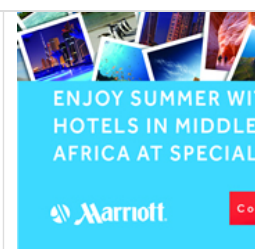
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despite this, the downward production trend is expected to continue. The fall of gas production is forecasted to quicken at the end of the decade, with only ca 1,500 MMCF/d—a level not seen since early 1990s—being annually produced by 2030. The decline of liquids production is set to quicken in just a couple of years. By 2030, Egypt is forecasted to produce solely an average of 100,000 bbls/d, a level last seen in the 1960s. For comparison, this year Egypt is expected to produce 5,460 MMCF/d of gas and 743,000 bbls/d of liquids.

### Key Companies in Egypt's Hydrocarbon Sector

As Egypt offers investment opportunities of varied size and type in the hydrocarbon sector, its corporate landscape is the most diverse in North Africa, encompassing majors as well as small independent companies.

In Egypt, BP has mature oil producing fields at the Gulf of Suez and new gas developments in the Mediterranean. Thanks to many discoveries, it owns the largest gas reserves in Egypt. However, much of these have not been developed due to low domestic gas prices.

Whereas in the 1990s, Eni's Egypt portfolio mostly consisted of oil-producing assets at the Gulf of Suez, improved fiscal terms for gas made it turn to the gas market. By now, it has become the leading gas supplier to the domestic market. The company also invested in an LNG export plant in Damietta, but this



Egyptian assets to the Chinese giant Sinopec as shareholders undervalued them due to the country's political instability.

BG is the main LNG exporter in Egypt, purchasing the entire output from the two-train Idku LNG plant. However, the plant is operating significantly below capacity since 2010 when more gas started to be diverted to the domestic market due to increase local consumption and decreased exports. Accordingly, BG issued force majeure notices on January 27th to avoid legal consequences.

### Egypt's Oil and Gas Infrastructure

Egypt has several oil and gas pipelines. The most important oil pipeline is SUMED the 2.4 million bbls/d running from Ain Sukhna marine terminal at the Gulf of Suez to the Sidi Kerir terminal at the Mediterranean via the Dahshour pumping station outside Cairo. The line, owned 50% by EGPC, carries crude from Egypt, Saudi Arabia and Iran.

There are two gas export pipelines. In 2003, a 970 MMCF/d pipeline from El-Arish in Sinai to the Jordanian port of Aqaba began operations. Egypt started supplying gas to Jordan with preferential prices and 90% of the daily contracted quantity on a take or pay basis under a 15-year contract. El-Arish-Aqaba line is the first phase of the Arab Gas Pipeline. Upon completion of the second phase in 2006, gas began flowing from Aqaba to el-Rehab on the Jordan-Syria border. By 2008, the line was extended to Syria. Phase four has not been agreed upon. It has been envisaged that the pipeline would be extended from Syria to Lebanon and Turkey, but these plans were shelved after Egypt started suffering from gas supply deficit. Due to the deficit and attacks on the el-Arish-Aqaba pipeline in Sinai, Egypt has not provided Jordan with agreed quantities of gas (240 MMCF/d) for several months, even though the terms of their contract were renegotiated in 2011 so that gas price more than doubled to USD 5 MMBTU, informs Middle East Monitor.

In June 2005, Egypt signed an agreement to supply Israel with 160 MMCF of gas per day over 20 years. A subsea pipeline was built for this from el-Arish to Ashkelon in Israel by 2008. Following the 2011 revolution, the pipeline was repeatedly sabotaged around the el-Arish area. Eventually, in April 2012 Cairo canceled the deal based on popular demand from Egyptians. The deal had been unpopular among Egyptians. Several Egyptian officials were sentenced to prison in summer 2012 for their role in concluding the deal that foresaw selling gas at below market prices, according to BBC.

Egypt can export its gas also via two LNG terminals. The Damietta terminal, with annual capacity of an average of 5 million tonnes (670 MCF/d), became operational in 2004. 80% of the terminal is owned by Union Fenosa Gas, a joint venture between Eni and Spain's Gas Natural, with the rest belonging to EGAS and EGPC. Union Fenosa Gas and BP have long-term contracts for purchasing its LNG. The Idku terminal, with annual capacity of an average of 7 million tonnes, started operations in 2005. It is owned by BG (35.5%), Petronas (35.5%), GDF Suez (5%) and EGAS & EGPC (24%). The entire output from the train one is purchased by GDF Suez and that of the train two by BG. Due to lack of gas, the Damietta plant has been idle since 2012 and the output of the Idku facility has decreased steadily over the last year, reports Reuters.

In 2012, Egypt launched a tender for a floating storage and regasification unit to import LNG, which is hoped to become operational by summer 2014. LNG imports are expected to reach up to 3.7 million tonnes a year, informs ICIS.

Egypt has nine refineries, with a total capacity of 680,000 bbls/d. The first of them, the Suez refinery, was set up in 1913 by the Anglo Egyptian Oilfields company. The largest refinery is 145,000 bbls/d Mostorod 40 km north of Cairo, built in 1973. The Egyptian Refining Company plans to build an expansion to it by 2016 to provide Egypt with additional lighter petroleum products. According to the company, the refinery would supply 50% of the diesel Egypt is currently importing, informs Mada Masr. The multi-billion-dollar project is a public-private partnership, with EGPC holding a 23.8% stake and other key shareholders being Citadel Capital and EFG Hermes.

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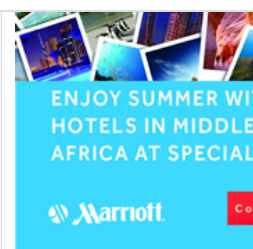
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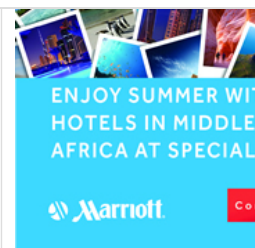
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