## POWERNG THROUGH A PANDEMC

AN INTERVIEW WITH

THE MINISTER OF PETROLEUM AND MINERAL RESOURCES TAREK EL MOLLA

## ACHIEVEMENTS DESPITE THE PANDEMIC

When we were writing down our 2020 resolutions, we never thought that our main objective will be to overcome a global pandemic. Our lives changed drastically in one year. The oil and gas industry faced many global challenges during the last year as well. Yet, Egypt succussed in achieving new milestones despite the pandemic thanks to the economic reforms launched in 2016.
To know more about the achievements accomplished by the Egyptian petroleum industry in 2020, Egypt Oil \& Gas Newspaper conducted an exclusive interview with H.E. Eng. Tarek El Molla. He shared with us production rates, signed agreements, new discoveries and more. El Molla additionally provided us with a glimpse of the ministry's vision in 2021. This is the third year in a row to have this rich interview with the minister in our January issue.
We also had the chance to talk to Mathios Rigas, CEO of Energean, about Edison's new acquisition deal in details. He shared with us the company's vision
and future plans. It is worth noting that the interview is available online. You can easily watch it via our YouTube channel or our official pages on different social media platforms.
The issue includes a variety of features tackling the industry updates, achievements and major events during the last year.
In the research and analysis section, we provide our readers with an analytical report about Egypt's natural gas exploration and drilling activities status over fiscal years (2018/19-2019/20).

WISH YOU A HAPPY NEW YEAR FULL OF
ACHIEVEMENTS AND SUCCESSES!

## MAHINAZ EL BAZ

Acting Editor-In-Chief - Research \& Analysis Manager

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THE GOLDEN YEAR OF EGYPT'S MINING SECTOR

EGYPT'S REFINING SECTOR MAKES A COMEBACK IN 2020

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> EGYPT UPSTREAM GATEWAY YOUR GATEWAY TO EGYPT'S UPSTREAM INVESTMENTS

## EUG

33 The Egypt Upstream Gateway will provide a plafform to attract new investments to Egypt from all around the world through state-of-the-art bid round digital enablement. It reflects the progressive vision we have for Egypt's Ministry of Petroleum digitalization גぇ
H.E. TAREK EL MOLLA

MINISTER OF PETROLEUM \& MINERAL RESOURCES - ARAB REPUBLIC OF EGYPT

## VISION

Optimizing the value of E\&P data by attracting
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## MISSION

Build a fully integrated plafform for Egypt to enable seamless data access and the opportunity to explore new
 plays and prospects and to evaluate basins' potential

## ACHIEVEMENTS

## MOP SIGNS 26 E\&P AGREEMENTS IN 20182020

The Ministry of Petroleum and Mineral Resources signed 26 agreements for exploration and production (E\&P) activities to develop petroleum reserves in addition to pumping $\$ 6.3$ billion in investments from 2018 to 2020.

The Egyptian Natural Gas Holding Company (EGAS) alone signed seven E\&P agreements to develop reserves and achieve more discoveries in the Mediterranean Sea. Natural gas production amounted to 4,562 billion cubic feet (bcf), while the total production of crude, condensates, and butane reached 63 milliontons (mmt). The ministry provided 4,288 bcf of natural gas for domestic consumption to meet the local market needs as well, while exports of natural gas and liquefied natural gas (LNG) reached about 380 bcf. During the same period, the ministry managed to meet the local market's need for petroleum products by providing about 58.5 mmt .

Additionally, natural gas was connected to 2.3 million housing units, an increase of $15 \%$ over the plan and was connected to 141 new areas for the first time. Around 74,600 vehicles were converted to run on natural gas as well. The total produced quantities of petrochemical products reached about 8.2 mmt in which 5.9 mmt of them were exported.

## EGYPT IMPLEMENTS 37 PETROLEUM PROJECTS WORTH EGP 431.3 BIN TWO YEARS

The Minister of Planning and Economic Development, Hala Al Said, announced that 37 petroleum projects were implemented with total investment costs EGP 431.3 billion during the last two years, 18 of which were implemented during fiscal year (FY) 2019/2020 worth EGP 96.7 billion.

Five projects were implemented in El Beheira at a cost of EGP 16.4 biliion putting it on top of governorates interms of projects cost besides other projects implemented in Suez, Alexandria, NorthSinai, Kafr El Shiekh, Assiut, Qalyubia, Daqahlia, Beni Suef, Port Said, Red Sea and Matroh.
In addition, 14 joint projects were executed between the governorates at a total cost EGP 57.3 bilion. The projects that have been finished during the past two years included; developing fields of North Alexandria and West Delta at a capacity of 0.7 billion tons per day of petroleum products, Egyptian Refinery Project of Mostorod at a capacity of 4.7 million tons ( mmt ) of petroleum products per year, and natural gas pipeline Nawras/Abu Madi/ Al Gameel.
Additionally, the implemented projectsencompass developing West Deltafields in the deepwater of the Mediterranean at a capacity of 350 million cubic feet per day (mct/d), developing North West October filed in Gulf of Suez with a capacity 3,200 bbl/d, developing Disouq fields with a capacity of $100 \mathrm{mcf} / \mathrm{d}$.

## PETROLEUM INVESTMENTS SURPASS EGP 1.2 T IN 6 YEARS

The petroleum sector's investments over the past six years have surpassed EGP 1.2 trillion as it also attracted about $90 \%$ of direct foreign investments in Egypt, Tarek El Molla, Minister of Petroleum and Mineral Resources, stated during the fourth edition of Al-Ahram Energy Conference.
The minister elaborated that, during that period, the sector managed to achieve the highest contribution to the Gross domestic product (GDP) by 27\%, and achieved a growth in the natural gas sector by $25 \%$.
The sector also implemented two projects for geophysical data collection in the Red Sea and the Western Mediterranean region, developed the petrochemical industry, reduced international oil companies' (IOCs) arrears to less than a quarter, delivered natural gas to about five million housing units, and implemented new refining projects to reach self-sufficiency in gasoline and diesel.
When it comes to the natural gas sector, Egypt implemented 29 projects with investments of EGP 437 biliion and managed to reach self-sufficiency in natural gas and to become an exporter. This contributed to making Egypt the thirteenth country in the world, the second in Africa, and the fifth in the Middle East in the production of natural gas. Additionally, El Molla highlighted the car conversion project to run on natural gas and diesel which aims to convert 400,000 vehicles over the course of three years and establish 325 natural gas stations in a year.

## EGYPT ESTABLISHES FIRST PHOSPHATE COMPANY UNDER FREE ZONE SYSTEM

Abu Tartourfor Phosphoric Acid Production Company was founded after the approval of its establishment was issued by the prime minister's decision No. 16 of 2020 to become the first company to operate with the free zone system in El-Wadi El-Gedid Governorate.
Tarek El Molla, Minister of Petroleum and Mineral Resources, who attended the founding assembly, stated that the new company will handle all operations of the phosphoric acid manufacturing complex with investments exceeding \$1 billion and a production capacity of 1 million tons per year ( $\mathrm{mmt} / \mathrm{y}$ ) with a concentration of $54 \%$ of phosphoric acid. This aligns with the ministry's strategy to develop Egypt's natural resources and maximize its added value to benefit the national economy.
The minister said that the assembly aims to encourage investments in remote governorates especially the ones rich with natural resources. He highlighted that operating companies under the investment law and free zones are a cornerstone to other similar future projects. For his part, Mohamed Abdel Azim, Head of PhosPhateMisr, stated that the main objective of establishing Abu Tartour Company is to operate and develop a plant for producing phosphoric acid and expand trade inside and outside of the country.

## MOP, EU LAUNCH ENERGY EFFICIENCY CAPACITY BUILDING PROGRAM

The Ministry of Petroleum and Mineral Resources in cooperation with the European Union (EU) launched an energy efficiency capacity building program. This came during the EU's Support the Technical and Financial Sustainability of the Renewable Energy and Energy Efficiency Sectors event.

Tarek EIMolla, Minister of Petroleum and Mineral Resources, noted that the program will have a direct impact on reducing operating costs and improving companies' finances, in addition to reducing emissions and combating climate change. The program aligns with the ministry's Middle Management Program which aims to improve the sector's efficiency and the national economy. Launching the program is also in line with Egypt's 2030 Vision for sustainable development and the state's strategy to improve energy efficiency by 2035.
The minister stated that energy efficiency is an important pillar of the ministry's Modernization Project denoting that through it, 17 companies have saved about $\$ 30$ million. Additionally, the ministry in cooperation with the European Bank for Reconstruction and Development (EBRD), began two major projects to rationalize energy consumption in the Egyptian Natural Gas Company (GASCO) and Suez Oil Processing Company (SOPC).
Moreover, two studies on improving energy efficiency and developing production units are being prepared in Alexandria Petroleum Company and Nasr Petroleum Company. Several initiatives to improve energy efficiency are also being implemented in several companies in the sector in cooperation with the EU, World Bank, and the Japan International Cooperation Agency.

## EGPC BECOMES IOGP MEMBER

The Egyptian General Petroleum Corporation (EGPC) announced that it has succeeded injoining the International Association Oil and Gas Producers (IOGP) under the framework of the Ministry of Petroleum and Mineral Resources' Modernization Project and application of the health, safety and environment (HSE) measurements within the oil and gas sector.
According to IOGP standards, EGPC has completed the measurements to manage personal safety and occupational HSE. Abed Ezz EI Regal, the CEO of EGPC, has approved the new system which includes two main parts. The first part addresses EGPC Operations Management System (EGPC OMS), while the second part encompasses the EGPCHSE code of practice including operations management, leadership and follow up systems, transportation of petroleum products and control systems.

EGPC has consolidated this new system to be applied by all its subsidiaries and will be followed up by a technical committee from the corporation and representatives of some companies to confirm its implementation and facilitate any obstacles that may come up during the execution. Additionally, the system is uploaded to the petroleum sector's intranet.

## AGREEMENTS

## PARLIAMENT APPROVES DRAFT LAWS FOR NEW E\&P AGREEMENTS

The House of Representatives approved new draft laws authorizing the Minister of Petroleum and Mineral Resources to contract for exploration and production (E\&P) projects across the republic.

One of the laws allows the minister to contract with the Egyptian General Petroleum Corporation (EGPC) and BP Egyptto explore and develop the South Ghareb offshore in the Gulf of Suez.

Another law will allow Ganoub EI Wadi Petroleum Holding Company (Ganope) and the National Egyptian Drilling and Petroleum Services Company to explore Wadi Deb region in the Eastern Desert.

The House also approved a law authorizing the minister to contract with EGPC, the International Egyptian Oil Company (IEOC) Production B.V. to explore Meliha development area in the Western Desert.

The House also approved Presidential Decree No. 644 of 2020 regarding approval of the Charter of the Eastern Mediterranean Gas Forum (EMGF) signed in Cairo on September 22, 2020.

## EGYPT-LED AGREEMENT TO INCREASE PETROLEUM INVESTMENTS IN AFRICA

Africa Energy Investment Corporation (AEICORP) and the African Export Development Bank succeeded in reaching a preliminary agreement to increase petroleum investments in Africa, Minister of Petroleum and Mineral Resources, Tarek EIMolla, announced during the African Petroleum Producers Organization's (APPO) 39th meeting.

The negotiations for the agreement, which will be signed in Cairo, were finalized under the auspices of the Egyptian Ministry of Petroleum and Mineral Resources.
The minister added that five African countries are currently preparing a detailed study on the future of oil and gas amid the COVID-19 crisis. A technical committee was also formed specially to conduct the study in partnership with international consultants and it is expected to be done by mid-year 2021. El Molla noted that the study would help African countries in facing the repercussions of the pandemicdriven oil and gas industry.

## PETROLEUM, JUSTICE MINISTRIES SIGN PROTOCOL TO SUPPORT DIGITAL LITIGATION SYSTEM

The Minister of Petroleum and Mineral Resources, Tarek El Molla, signed a protocol with the Minister of Justice, Omar Marwan, on supporting an electronic litigation system and automating all transactions pertaining to the economic court. This
came during the Technology Exhibition Fair and Forum for the Middle East and Africa (Cairo ICT 2020).
El Molla affirmed the ministry's keenness to support the protocol's implementation as an essential step to keep pace with global progress. Upon signing, the minister stated that digital transformation is a national project where all sectors and institutions come together to adopt Egypt Vision 2030 for sustainable development to build a modern Egyptian state. He noted that the petroleum sector is a pioneer in digital transformation through the ministry's Modernization Project which succeeded in adopting new technological solutions to boost the efficiency of the oil and gas industry.

Additionally, the sector managed to establish an enterprise resource planning (ERP) system to facilitate datacirculation between operating entities to increase performance. The ministry also succeeded in promoting investment opportunities in the oil and gas sector which in return accelerated international investments and increased their flow to the sector.

## AFREXIMBANK, AEICORP SIGN EGYPTIANBROKERED AGREEMENT TO BOOST ENERGY COOPERATION

The African Export-Import Bank (Afreximbank) and Africa Energy Investment Corporation (AEICORP) signed a cooperation agreement that was brokered by Egypt to enhance the energy sector.

The two parties will cooperate on projects of mutual interest in the energy sector especially in Africa's infrastructure development to attract investments to the energy and mining sectors.

During the signing ceremony, Tarek El Molla, Minister of Petroleum and Mineral Resources, noted that the current period has encouraged a culture of cooperation between countries, affirming that it is imperative for Africa to achieve maximum economic benefit from its resources. He added that the petroleum industry in Africa is essential to the development of other sectors as well.

## EMGF REVIEWS HQ AGREEMENT, ROADMAP 2021

The Eastern Mediterranean Gas Forum (EMGF) reviewed the situation of the headquarters (HQ) agreement between Egypt and the forum during its firstmeeting after its official establishment.

The forum also discussed the prospect of enrolling new members and observers to the forum in light of the interest many countries have expressed. The members also reviewed the forum's roadmap for 2021 which included the work plan for the Gas Industry Advisory Committee (GIAC) as well as detailed plans for its technical, economic, and organizational subcommittees. They also approved requestsfor two additional members to join GIAC bringing the number of its members to 29. This further establishesEMGF as an effective organization to achieve energy cooperation in the Eastern Mediterranean.

## INVESTMENTS

## EGYPT DOUBLES OIL HEDGES IN FY 2020/21

Egypt has almost doubled its oil hedges during the fiscal year (FY) 2020/21 as a precautionary measure against the possible increase of oil prices, Finance Minister Mohamed Maait said
Maait did not elaborate on the value of the contracts. The minister also confirmed that Egypt now has enough oil stock until June 30.

The price slump helped Egypt as an importer as the benchmark Brent crude still hovers around $\$ 50$ per barrel (bbl) and Egypt's 2020/21 budget plan was based on an oil price of \$61/bbl.

## SFE OFFERS WATANIYA TO PRIVATE SECTOR INVESTORS

The Sovereign Fund of Egypt (SFE) has selected Wataniya Petroleum, a subsidiary of the National Service Products Organization (NSPO), to be offered to private sector investors as a first stage and then will be offered in the Egyptian bourse where all Egyptians can invest init, Minister of Planning and Economic Developmentand SFE Chairperson, Hala El-Said, stated.

El-Said added that other companies will soon be offered to the private sector as well with conditions to ensure the highest returns for the state and create investment opportunities for the private sector.

Ayman Soliman, CEO of SFE, stated that the main purpose of the SFE is to create investment opportunities in Egypt's untapped assets. It should be noted that SFE and NSPO signed a cooperation agreement in February to offer some of NSPO's subsidiaries to private investors.

## ENI REACHES AGREEMENT WITH EGYPT TO RESTART DAMIETTA LNG PLANT

Eni has come agreed with the Egyptian General Petroleum Corporation (EGPC), the Egyptian Natural Gas Holding Company (EGAS), andits Union Fenosa Gas (UFG) partner Naturgy to finallyre-open the Damiettaliquefaction plant in Q1 2021.
Naturgy will opt-out of the project and redistribute its shares among the remaining shareholders in addition to receiving about $\$ 600$ million and most of UFG's assets outside Egypt excluding UFG's commercial activities in Spain where Eni will take over them. Eni will then own $50 \%$ of the plant, EGAS will hold $40 \%$, and EGPC the remaining $10 \%$. Eni will also take over the contract for natural gas' purchases for the plant and will receive corresponding liquefaction rights. This is to increase its volumes of liquified natural gas (LNG) portfolio by 3.78 bililion cubic meters per year (bcm/y), noting that the plant has a capacity of $7.56 \mathrm{bcm} / \mathrm{y}$.
The plant has been on hiatus for eight years, however, restarting the project aims to reinforce Eni's strategic objectivesto expanditsLNG portfolio, especially in Egypt. Notonly that, but this step will allow strengthening Eni's presence in the EasternMediterranean, a key region for the supply of natural gas, animportantresource for the energy transition.

## UOG INCREASES PRODUCTION BY 20\% IN H2 2020

United Oii \& Gas PLC (UOG) increased the average production rate in the Abu Sennan concession for H2 2020 to reach 2,370 barrels of oil equivalent per day (bbloe/d), an increase of $20 \%$ in comparison with H1 2020.
UOG also signed an EDC-50 rig contract to commence a driling program on the Abu Sennan concession. The company will start with ASH-3 well targeting Alam EI Bueib (AEB) reservoirs in an area of the ASH Field updip of the ASH-2 production well. It is anticipated that the ASH-3 well will take up to 60 days to drill and test. It is worth noting that the company also plans to benefit from the ASH-2 gas pipeline when brought onstream in 2021. The pipeline has the potential to add up to 1,000 (boe/d) of gross production.

## SDX RECORDS 90\% PRODUCTION INCREASE IN NINE MONTHS

SDX company increased its production by $90 \%$ during the first nine months of 2020 after reaching 6,646 barrels of equivalent per day (bbloe/d) compared to 3,501 bbloe in the same period of 2019 .

The company attributed these positive resultsto the high performance of South Disouq asset which came above the expectations delivering gross production of 48.6 million standard cubic feet per day ( $\mathrm{mmscc} / \mathrm{d}$ ) of dry gas and 467 barrels per day (bbl/d) of condensates. SDX completed South Disouq's two-well driling campaign during that period with the second well SD-12X which is expected to be connected to lon Yunus-1X well in Q1 2021 and produce about $10-12 \mathrm{mmsc} / \mathrm{d}$.
SDX elaborated that the new well of Rabul-3 located in West Gharib was successfully drilled and tied to the production line during this period, achieving production higher than the guidance of $3,200-3,300 \mathrm{bb} / \mathrm{d}$. The company also sold its North West Gemsa assets during the nine monthswith a net of $\$ 1.6$ million. Additionally, the company plans to accelerateits drilling campaign of Hanut prospect to be during Q2/Q3 of 2021 instead of H 1 of 2022 targeting 139 billion cubic feet (bcf). SDX expects to drill Mohsen and Warda prospects in 2022 targeting 26 bcf and 14 bcf, respectively.

## ENERGEAN COMPLETES ACQUISITION OF EDISON E\&P

Oil and gas company Energean has completed its acquisition of Edison Exploration \& Production (E\&P) S.p.A. from Edison.
The gross consideration for the transaction, as at the locked box date of January 1,2019 , is $\$ 284$ million and the final net consideration (net of cash acquired), as of December 17 is $\$ 203$ milion. In connection with the completion of the acquisition of Edison E\&P, an application has been made to the Financial Conduct Authority and to the London Stock Exchange for 177,089,406 ordinary shares of 1 pence each in the company to be re-admitted to the premium listing segment of the Official List of the Financial Conduct Authority and to trading on the main market for listed securities of the London Stock Exchange.
Energean entered into a conditional SPA in July 2019 to acquire Edison E\&P. The acquistion deal was originally valued at $\$ 750$ milion initial consideration and $\$ 100$ million contingent consideration

## TRANSGLOBE REACHES AGREEMENT WITH EGPC TO MERGE EASTERN DESERT CONCESSIONS

TransGlobe reached an agreement with the Egyptian General Petroleum Corporation (EGPC) to merge the company's three existing Eastern Desert concessions into a new modernized concession agreement.

The agreement will take effect inFebruary, where the West Gharib, WestBakr, and North West Gharib concessions in the Eastern Desert will be merged. After the merger, the company is estimated to have an economic contingent resource volume of 59.1 million barrels oil (mmbll). TransGlobe will also pay EGPC an initial equalization payment of $\$ 15$ million and a signature bonus of $\$ 1$ million by February 2022, with an additional five annual equalization payments of $\$ 10$ million each until February 2026. Additionally, a newjoint venture $(\mathrm{JV})$ will be established by Dara Petroleum Company, West Bakr Petroleum Company, and North West Gharib Petroleum Company to include their assets, facilities, and infrastructure to increase operational efficiencies.

## TECHNIPFMC BEGINS EPC WORK AT ANOPC'S HYDROCRACKING COMPLEX

TechnipFMC commenced its work on the Engineering, Procurement, and Construction (EPC) contract with Assiut National Oil Processing Company (ANOPC) for the construction of a new Hydrocracking Complex for the Assiut refinery in Egypt.

TechnipFMC was awarded the project back in July. Per the contract, the company will cover new process units such as a Vacuum Distillation Unit, a Diesel Hydrocracking Unit, a Delayed Coker Unit, a Distillate Hydrotreating Unit as well as a Hydrogen Production Facility Unit using TechnipFMC's steam reforming proprietary technology.
The project supports Egypt's energy transition strategy by minimizing environmental emissions in addition to bolstering economic growth in rural areas and reducing the government export bill.

## NEPTUNE APPOINTS MOHAMED MOUNES AS NEW MANAGING DIRECTOR FOR EGYPT

Neptune Energy company announced that ithas appointed Mohamed Mounes as a Managing Director for Egypt as of December.

Mounes has recently held the position of Petroleum and Mineral Resources Minister's Advisor for Gas Affairs. He has a strong technical and commercial background of almost 40 years. He began his career as a Petroleum Engineer in the Gulf of Suez Petroleum Company (GUPCO) and held several senior leadership roles in different petroleum companies.

## IOCS HIGHLIGHT EGYPT'S INVESTMENT POTENTIALS DURING AEC

Shell and Schlumberger participated in the fourth edition of Al-Ahram Energy Conference (AEC) to discuss their investments in Egypt, where they highlighted the investment potentials of Egypt's oil and gas sector.

Moataz Darwish, Vice President of Shell, stated that Egypt is an important investment region noting that Shell operates multiple projects in addition to lubricants due to its diversified products. He added that the company plans to conduct seismic surveys in offshore areas and highlighted Shell's exploration and production (E\&P) programto improve business efficiency and operate thefields in a safer, more efficient, reliable, and cost-effective manner.
For his part, Karim Badawi, Managing Director at Egypt and EastMediterranean - Schlumberger, pointed out that his company is a key partner in implementing the Modernization Project, noting that the program has contributed to increasing investment in Egypt's oil and gas sector. Badawi stated that Schlumberger inaugurated the largest operation center in Africa and the Middle East which contributes to Egypt becoming a regional energy hub as the center became essential to support the company's operations in the region; in Lebanon, Jordan, and Sudan.

## CENTAMIN AWARDS CAPITAL DRILLING NEW CONTRACT, EXTENDS ANOTHER

Centamin awarded Capital Drilling (Egypt) LLC with a conditional open-pit waste mining services contract for the East wall in addition to expanding and extending its existing driling contract at Sukari gold mine.
The waste contract extends for four years beginning in January 2021 and it is expected to complete about 120 million tons ( $m$ t) open pit waste stripping at Sukari mine during that period. The contract enables Centamin to accelerate the increased waste stripping program and improve overall operational flexibility in the open pit. As for the amended drilling contract with Capital, Cemtamin extended its longevity from September 30, 2023, to December 31, 2024. It also expanded its rigs by nine blast-hole rigs, bringing total capital production rigs operating at Sukari to 24.

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## Wael Abdulla

Country Manager Landmark - Egypt \& Libya, Landmark Software \& Services

## SAUDI ARABIA



Saudi Aramco, the world's largest oil company, has completed the issuance of $\$ 8$ billion worth of senior international bonds. A total of 40,000 bonds were issued at a value of $\$ 200,000$ each, bringing the total to $\$ 8$ billion. The bonds are set to mature at the following rate: $1.250 \%$ for Bonds maturing in three years, 1.625\% for Bonds maturing in five years, 2.250\% for Bonds maturing in 10 years, $3.250 \%$ for Bonds maturing in 30 years, and $3.500 \%$ for Bonds maturing in 50 years.

Saudi Aramco, the world's largest oil company, has kick-started a jumbo bond sale on November 17 to help fund its promised $\$ 75$ billion dividends. The company is selling a five-part dollar deal, with tranches maturing in three, five, 10, 30 , and 50 years. As a means to muster up this liquidity, the company is delving into the debt markets for the first time since April 2019. This semi-drastic measure can be attributed to slumping crude prices that have resulted in profit to fall $45 \%$ in Q3. Due to this reduction in cash flow, the company is currently unable to generate enough cash to fund investor payouts, which almost all of which go to the Saudi government, which needs the money to plug a widening budget deficit and prop up a slumping economy.

The world's biggest oil exporter, Saudi Arabia, has set its sights on becoming the biggest player in supplying hydrogen to the market. In terms of natural resources, the kingdom has large natural gas reserves that enable it to produce blue hydrogen. This materializes in the form of blue hydrogen (later transformed into Blue Ammonia), a fuel that is produced when gas is reformed in a process that captures the carbon dioxide byproduct. With regard to transforming infrastructure, the kingdom has plans to build a $\$ 5$ billion facility in Neom, where hydrogen will be derived from solar
power, so-called green hydrogen.
Saudi Aramco announced that it has signed six memoranda of understanding (MoUs) with companies of Shell, AMG Recycling BV, Suzhou XDM, Xinfoo, SUPCON and Posco to boost its flagship localization program. These collaborations will pave the way for launching new businesses across multiple growth sectors including steel plate, manufacturing, industrial 3D printing, digital equipment manufacturing, energy management and control, catalyst manufacturing and recycling, and manufacturing advanced chip and smart sensor. Aramco is aiming at increasing the local production and boosting the domestic supply chain by conducting new international partnerships and establishing new companies through an Industrial Investment Program (IIP) which is linked to the development of the company's business.

Saudi Aramco and Baker Hughes have formed a 50/50 joint venture (JV), Novel Non-Metallic Solutions Manufacturing (Novel), to develop a broad range of non-metallic products for multiple applications in the energy sector. Novel's new facility is being developed at King Salman Energy Park in Saudi Arabia's Eastern Province (SPARK) which is a 50-square-kilometer energy city aimed to make Saudi Arabia a global energy, industrial, and technology hub. The new facility aligns with Saudi Arabia's Vision 2030 in encouraging the development of an evolving and innovative oil sector. It is worth noting that the JV aims to seek new opportunities in oil-based products and to reduce carbon emissions.

Iran's refineries have the capacity to turn 2 million barrels of crude oil (mmbl) into petroleum products daily, according to the Secretary-General of Iran's Oil Refining Industry Contractors Association (ORICA). The main petroleum products in Iran's refineries include gasoline, diesel, aircraft fuel, and kerosene in which some are used for local consumption and the surplus is exported. Despite the imposed sanctions, Iran's refineries will be able to meet the local consumption. Iran's daily consumption of gasoline ranges between 75 to 110 million liters, yet none have been imported in the past two years.

A senior Iranian official, Ali Karani, has attested that oil and gas exports will increase by building energy complexes in the province of Khuzestan. So far, the Iranian Ministry of Industry, Mine, and Trade has given permission to build energy complexes in the province. With this said, the decision is still subject to all-out support from the necessary governing bodies. Khuzestan is a province in southwestern Iran
and represents an important energy hub that is home to an array of oil, gas, and petrochemical projects.

Iran is planning to raise oil production in 2021, as it expects a loosening of US sanctions after Joe Biden becomes president. Iranian Oil Minister, Bijan Namdar Zanganeh, told lawmakers that Iran is going to pump 4.5 million barrels per day ( $\mathrm{mmbbl} / \mathrm{d}$ ) of oil and liquefied natural gas during the next Iranian calendar year beginning on March 21. He also mentioned that Iran will raise oil exports to $2.3 \mathrm{mmbbl} / \mathrm{d}$ as it is expected to cover $25 \%$ of Iran's budget in March 2022. Iran's crude production has almost halved to $1.9 \mathrm{mmbbl} / \mathrm{d}$ since former President Donald Trump withdrew from a nuclear deal with the Islamic Republic in 2018 and tightened sanctions.Exports have dropped to $133,000 \mathrm{bbl} / \mathrm{d}$ three years ago as almost all of Iran's shipments go to China.

## RUSSIA

Sova Capital and BCS brokerages said that Rosneft company plans to sell some of its underperforming oil fields to local companies. Sova Capital said that Rosneft plans to sell some of its brownfields in southern Russia including Samaraneftegas, Orenburgneft, RN-SevernyaNeft, Talinskoye, Varyeganneftegas and Sakhalinmoreneftegas.BCS brokerage noted that Rosneft was planning to sell some of its marginal assets to support its capital for developing its huge project, Vostok Oil, which will develop hydrocarbons in the Russian Arctic.

Russian NOVATEK Green Energy has launched its first carbon- neutral liquified natural gas (LNG) fuel station in Rostock at Germany. This came as a part of the company's long-term strategy to build a network of LNG stations providing clean fuel in Europe at key transport connecting points between Germany and Poland.

Russian Gazprom company said that it exported natural gas to China by 113.6\% of the planned volume in November via Power of Siberia gas trunkline from the

Chayandinskoye field. Gazprom added that daily average volumes in November increased from October by $16.2 \%$. On November 12, the surplus in daily volumes hit a record high of $25 \%$. According to the statement, the total of exported natural gas to China via Power of Siberia reached 3.84 billion cubic meters (bcm) since its launch a year ago. It stated that the company plans to further increase gas exports in 2021.

Rusneftekhim, Russian Oil Company JSC, raised its concession fund in the Yamalo- Nenets Autonomous Area (YANAA), western Siberia. Rusneftekhim has bought five concession blocks in the Shuryshkarsky district of the YANAA: llyagortsky, Mategansky, Ust-Kunovatsky, Khalasiegansky, and Yuzhno-Tiltimsky, with a total area of $8,430 \mathrm{~km} 2$. The initial resources on the state's balance sheet are 35.11 million tons (mmt) of oil and 30.64 billion m 3 of gas. Additionally, the company is currently planning geological exploration projects, followed by drilling operations to indicate oil and gas deposits and place hydrocarbon reserves on the state balance sheet.

Oil India Limited (OIL) has made a new hydrocarbon discovery at well Dinjan-1 in Tinsukia Petroleum Mining Lease (PML) in Assam. Per the statement, the discovery was made in the Upper Assam Basin during H 1 of the fiscal year (FY) 2020/21 and the well has encountered multiple areas of sand in Kopili, Narpuh, and Lakadong+Therria formation. The company found gas from the Lakadong+Therria formations at a depth of 3,614 meters, producing at a level of 115,000 standard cubic meters per day ( $\mathrm{scm} / \mathrm{d}$ ). This discovery will create more exploration and production (E\&P) opportunities in Assam in addition to enhancing the gas production with future appraisal and development activities.

India plans to nearly double its oil refining capacity over the next five years, a much more ambitious plan than previously stated despite COVID-19 complications. The previous time scale quoted in June was to increase the country's production to 450-500 million tons ( mmt ) in 10 years from the current level of about 250 mmt . As well as refining, Modi indicated that the country is aiming to raise the share of natural gas in its energyconsumption mix by up to four times. At current, the more environmentallyfriendly fuel accounts for only $6 \%$ of the energy consumed in the country.

Indian Petronet Company announced that it is preparing to expand its businesses to include bunkering, compresses biogas and renewable energy targeting to change energy landscape but at the same time not diluting its focus on its core liquefied natural gas (LNG) portfolio. Company officials and analysts stated that this target is part of the company's effort to broaden its domestic presence and expand its international footprint.

Petronet will expand its businesses across the LNG value chain offering services like providing LNG as automotive fuel, LNG supply for mining activities and compressed biogas and LNG bunkering. Petronet plans to have ethane import facility at Dahej, floating storage regasification unit (FSRU) at Gopalpur.

Hindustan Oil Exploration Company (HOEC) will start oil and gas production from the B-80 block to produce 8,500 barrels of oil equivalent per day (bbloe/d) in April 2021. B-80 block is one of the five wells that had been discovered in the Arabian Sea, off the Mumbai coast by Oil and Natural Gas Corporation in India (ONGC), and produced 3,500 barrels per day (bbl/d). HOEC Managing Director, P Elango, stated that HOEC drilled a well in February 2020 and the other will be drilled in April 2021. The two wells will produce $5,500-6,000 \mathrm{bb} / \mathrm{d}$ and $12-15$ cubic feet per day (cf/d) of gas production.

Data obtained from industry sources showed that Indian oil imports from Africa and US, in November, have risen but dropped from the Middle East and Latin America. Oil imports from US increased by $49 \%$ in November recording a 13 -month high of $283,000 \mathrm{bbl} / \mathrm{d}$ compared to $4 \%$ in October. Additionally, India's oil imports from Africa rose by $23 \%$ in November. Meanwhile, the imports from Middle East have dropped by $4.5 \%$ to 2.6 million barrels per day ( $\mathrm{mmb} / \mathrm{d}$ ) in addition to imports from Latin America which dropped by $29 \%$ after recording $388,000 \mathrm{bbl} / \mathrm{d}$. According to the data, the total Indian oil imports decreased in November by $3.3 \%$ to $3.9 \mathrm{mmbl} / \mathrm{d}$ compared to October.

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## EXCLUSIVE

## POWERING THROUGH A PANDEMIC

## An Interview with the Minister of Petroleum and Mineral Resources, H.E. TAREK EL MOLLA



HOW DID THE STRUCTURAL REFORMS ADAPTED BY THE MINISTRY DURING THE PAST FEW YEARS HELP THE PETROLEUM SECTOR NAVIGATE THE PANDEMIC?

No doubt that COVID-19 pandemic represented a tangible test for the success and effectiveness of the country's economic reforms, as well as the measures that have been taken in the oil and gas sector at the same time. It strongly showed the impact of these reforms in reinforcing investment opportunities in this sector, strengthening the financial and investment position, and achieving sustainability. Our continuous efforts during the recent years paid off with the signing of 14 upstream agreements, in the midst of the pandemic's peak months from March till now, with major international oil companies (IOCs) that work in the Egyptian upstream domain for the first time, such as ExxonMobil and Chevron, with investments of about \$1.5 billion. We also inaugurated the new Egyptian Refining Company (ERC) refinery in Mostorod, along with the major expansions in one of Alexandria's refineries, with total investments of about $\$ 4.5$ billion. Both were inaugurated by H.E. President Abdel Fatah Al-Sisi. We continued upgrading Egypt's infrastructure that supports the efforts of transforming into a regional energy hub, after the inauguration of H.E. Prime Minister Mostafa Madbouly of the El Hamra Petroleum Port expansions and new shipping line on the Mediterranean coast. Furthermore, Egypt's efforts for utilizing the East Mediterranean natural gas resources paid off with the signing of the East Mediterranean Gas Forum (EMGF) Statute to become a regional intergovernmental organization.

## AGREEMENTS DURING THE PEAK OF COVID-19



DESPITE THE UNUSUAL CIRCUMSTANCES, EGYPT MANAGED TO MAKE SEVERAL DISCOVERIES. COULD YOU SHARE WITH US SOME OF THE HIGHLIGHTS OF 2020?

The most prominent and important achievement in 2020, as an exceptional year for the upstream activity, was definitely adding the Red Sea and the West Mediterranean to the world investment map for the first time, representing promising untapped areas, full of opportunities and potentials. In fact, those areas attracted investors and mega players to invest in the Egyptian oil and gas industry, which would be of great returns and positive outcomes over the next few years. However, in 2020, and despite the COVID-19 pandemic and its effect on the world oil prices decline,

62 new oil and gas discoveries were made in the Mediterranean Sea, Western and Eastern Deserts, Nile Delta and the Gulf of Suez; 15 of which were natural gas and 47 were crude oil discoveries.

## O. 62 NEW DISCOVERIES

0
47
A
15
Natural Gas

Location

- Mediterranean Sea



## DURING THE PANDEMIC THE SECTOR CONTRIBUTED TO 24\% OF THE GDP COMPARED TO 27\%IN THE PREVIOUS YEAR



HOW DID THE MINISTRY MANAGE TO MAINTAIN PRODUCTION PLANS AMID LAST YEAR'S EXCEPTIONAL CONDITIONS? WHAT WERE THE BREAKTHROUGHS IN CRUDE OIL AND NATURAL GAS PRODUCTION THIS PAST YEAR?

Dealing with these exceptional circumstances, the ministry has adopted the balance principle in applying its work strategy, achieving work plans, and preserving the lives and safety of workers at the same time. Operations and activities in production fields continued, in parallel with our full commitment to the precautionary measures. In 2020, we have completed major gas production projects, such as North Alexandria fields and Phase 9B at the deep waters of the West Delta, Baltim gas field, Katameya gas field, and others. This comes within the framework of putting five major projects of gas and crude production along with more than 200 new wells on the production map successfully over the whole year, with total natural gas production of about 1.5 billion cubic feet (bcf) and more than 190,000 barrels of crude oil and condensates. Egypt's current average production of crude oil, condensates and liquefied petroleum gas (LPG) is 638,000 barrels per day (bbl/d), whereas production of natural gas is about $6.6 \mathrm{bcf} / \mathrm{d}$, knowing that our production capacity allows us to produce about $7.2 \mathrm{bcf} / \mathrm{d}$.


DESPITE EVERYTHING, THE PETROLEUM SECTOR HAD A PRODUCTIVE YEARW SIGNING OVER 22 AGREEMENTS IN 2020. HOW WILL THESE AGREEMENTS IMPACT THE EXPLORATION AND PRODUCTION ARENA IN EGYPT?

We signed 22 upstream agreements with IOCs in 2020, with minimum investments of about $\$ 1.6$ billion and a signature bonus of about $\$ 139$ million, for drilling 74 wells. These agreements give hope in the near future, representing a key pillar for achieving more discoveries, as well as maximizing Egypt's production and reserves from new areas within its exclusive economic waters in the Red Sea and the Mediterranean Sea. Moreover, the focus on Egypt is obvious, particularly after the decision of Chevron and ExxonMobil companies to invest in nine blocks together. This provides the petroleum industry with the advanced technologies these companies possess for upstream operations in the new areas, in the West Mediterranean Sea and the Red Sea, in particular.

In light of such indicators and the growing interest of major IOCs, I think the upstream domain in Egypt is very promising, and there will be opportunities for discovering new oil and gas resources, and adding them to Egypt's production.


[^1]Despite the challenges imposed internationally on the petroleum industry, the attractive investment climate of the oil and gas industry in Egypt encouraged foreign companies to enhance their partnership with the petroleum sector, exerting efforts together to confront the international challenges. Of course, many factors supported this, and contributed to providing a positive, as well as resilient climate, on top of which came the successful economic reforms, as well as the political stability. This was reflected in signing 22 oil and gas upstream agreements in 2020, with
minimum investments of $\$ 1.6$ billion, which confirms the role of economic reforms in consolidating the petroleum sector to face the worldwide challenges in such period, through amending terms and models of agreements to attract foreign investments.

## AS EGYPT PAID MORE THAN 80\% OF ARREARS TO IOCS, HOW CAN THIS CONTRIBUTE TO THE INCREASING OF INVESTMENTS IN THE COMING PERIOD?

We succeeded in reducing the arrears gradually by $86 \%$, from about $\$ 6.3$ billion in 2013 to $\$ 850$ million at the end of the last fiscal year despite COVID-19 pandemic. This led to increasing our partners' confidence and stimulating their investments in oil and gas upstream operations. It is worth mentioning that, during the past four years, oil and gas investments exceeded $\$ 30$ billion. Moreover, Egypt has received new investments from major IOCs, such as Chevron and ExxonMobil in several areas within the Egyptian exclusive economic waters at the Red Sea and Mediterranean Sea.

ARREARS TO IOCS (\$ BILLION)


WHAT ARE EGYPT'S PLANS TO ATTRACT NEW INVESTMENTS IN LIGHT OF THE STATE OF CONTRACTION IN THE WORLD ECONOMY?

As I previously explained, Egypt is one of the few countries that managed to achieve growth during 2020, and that its economic reforms have proven their robustness and strength against the pandemic's impacts. Egypt is committed to its obligations


THE MINISTRY WILL CONTINUE TO PROVIDE NEW INVESTMENT OPPORTUNITIES THAT WILL ATTRACT NEWCOMERS AS WELL AS EXISTING PLAYERS.
and the rights of investors, including the foreign partners' arrears reduction to less than a quarter and the signing of 14 new petroleum agreements during the period of the COVID-19 pandemic since last March until October; these are important indicators that the investors take in mind. We are working within this framework with an integrated strategy that achieves our main goals in securing fuel supplies and implementing Egypt's national project of transforming into a regional oil and gas hub This shall be accomplished by continuing to offer petroleum and mining investment opportunities at all aspects in the whole chain of the oil and gas industry. We have an international bid round for the exploration and exploitation of gold and other minerals, investment opportunities in refining activities, oil and gas fields' development, and production agreements. We will continue to offer international bid rounds and ink petroleum agreements as they are key pillars of upstream activities. Our oil and gas activities to achieve optimal economic exploitation are continuous efforts, whether in projects implementation, offering bid rounds, or promoting investment opportunities.

## IN LIGHT OF THE MINISTRY'S DIGITAL TRANSFORMATION TRACK, WHAT ARE THE LATEST UPDATES ON EGYPT UPSTREAM GATEWAY (EUG)? HOW DOES IT CONTRIBUTE TO EGYPT'S ECONOMY IN TERMS OF INVESTMENTS AND EXPLORATION OPPORTUNITIES?

Currently, we are working on launching Egypt Upstream Gateway (EUG) to promote Egypt's promising oil and gas blocks internationally through availing the geological and technical data for the interested IOCs. This project is one of its kind in the Egyptian petroleum industry, and was implemented under the first program of the sector's modernization project (Upstream). This gateway is a modern quantum leap in promoting the oil and gas potentials via an integrated digital portal for the activity of exploration and production of oil and gas resources. It was implemented with the assistance of Schlumberger, a major IOC with expertise and advanced technological solutions. The gateway comprises the technical data of such activity and works to maximize its value, development and marketing worldwide. It displays opportunities, indicators, and potentials together and promote them via the new portal of the international bid rounds, offered by the petroleum sector over the coming period, with the aim to explore for new promising areas. This advanced mechanism will assist in taking investment decisions rapidly in Egypt through a clear perception based on information and data.

WHAT IS THE MINISTRY'S STRATEGY TO SUPPORT THE LEADERSHIP VISION TO MAXIMIZE THE USAGE OF NATURAL GAS?

The rapid expansion in natural gas utilization and its various services nationwide is on the top priorities of President Al-Sisi, due to its high economic, environmental and cultural returns to the citizen's daily life. Therefore, the ministry has adopted this presidential guidance and doubled the rates of natural gas connections to residential units annually to be 1.2 million new residential units per year, compared to only 600,000 units per year, previously.

Furthermore, we have launched an initiative, which is adopted consecutively for the third year now, within the context of the president's direction, for natural gas connection to be paid in installments, not exceeding EGP 30 per month for the regions that the natural gas is connected for the first time, without any down payment or interest.

In 2020, natural gas reached more than one million residential units, despite COVID-19 pandemic. In addition, we are collaborating with the state's ministries, to implement the president's initiative, launched last July, for expanding the replacement and converting vehicles to use natural gas as a fuel. It is an integrated and excellent initiative, in which citizens will feel the difference, as the natural gas cost stands for $50 \%$ of the gasoline cost per liter. Moreover, in order to increase the expansion of gas fueling stations, we are currently constructing 325 new stations until next December, which is an unprecedented number, along with the replacement and conversion of 400,000 vehicles to use natural gas within three years, in addition to providing stimulating programs, facilities and soft loans for the initiative beneficiaries.

## CARS CONVERTED TO NATURAL GAS



CAR SERVICES \& SUPPLY STATIONS

| 135 | Added in 2019 | $\mathbf{1 1 5}$ | Added in 2020 |
| :---: | :---: | :---: | :---: |
| 3,780 | country's Total | 325 | 2021 Target |

CYLINDERS DISTRIBUTION CENTERS
38
Added in 2019
32
Added in 2020

## 3,078 <br> Country's Total

NATURAL GAS DELIVERY

|  | 2019 | 2020 | Snessarotatatit |
| :---: | :---: | :---: | :---: |
| 龶 $\begin{gathered}\text { Residential Units } \\ \text { (milion) }\end{gathered}$ | 1.2 | +1 | 11.7 |
| [1. Commercial Units | 2,013 | 1,528 | - |
| fill Factories | 56 | 47 | - |

CNG STATIONS


HOW WILL THE CHANGES IN THE LNG SCENE THIS YEAR CONTRIBUTE TO EGYPT'S GOAL TO BECOME A REGIONAL ENERGY HUB?

Recently, the global oil and gas industry witnessed unprecedented challenges, and we are talking about a pandemic that lasted nearly for a year and its impacts are still there. In fact, many countries are still trying to mitigate its effects on their economies, but in Egypt, due to our success in implementing economic reforms for years, we were able to face the effects of the pandemic on our economy and the industry, in particular. On the other hand, Egypt has a strong strategic system in the field of natural gas, as it owns two plants for liquefying natural gas in ldku and Damietta, privileged by their location on the coasts of the Mediterranean, in addition to the presence of a Floating Storage Regasification Unit (FSRU) in Ain Sokhna and an extended and flexible pipeline network. All this enables Egypt, in spite of the challenges of the COVID-19 pandemic, to continue LNG exporting activities and to become a starting point for the Eastern Mediterranean gas to Europe and the world. In light of the growing expectations of a recovery of the pandemic in late 2021, with repeated news of vaccines, it is expected that Egypt will expand the activity of LNG in the coming years, as natural gas will remain, for many years to come, the most important fossil fuel, adopted by all countries in their transition to expand the use of renewable resources. Natural gas is considered the cleanest fossil fuel and one of the green energies that have low emissions, and Egypt, as part of its commitment to international agreements regarding reducing emissions and preserving the environment, adopts a strategy to expand the uses of natural gas at all life requirements in houses, factories, cars fueling, and power plants.

> THE MINISTRY ESTABLISHED THE UPSTREAM GATEWAY WHILE THE WORLD WAS FACING COVID-19. WE DID IT AT THE RIGHT TIME. THUS, WE WILL CONTINUE IN THIS REGARD.

AS THE EMGF TURNS INTO A REGIONAL ORGANIZATION, DO YOU EXPECT CHANGE IN THE DYNAMICS OF THE WORLD NATURAL GAS MARKET? WHAT ARE THE PROSPECTS OF COOPERATION UNDER THE UMBRELLA OF THE NEW ORGANIZATION AND ITS EFFECTS ON EGYPT?

The member countries of the EMGF share one joint interest, which is achieving the maximum economic benefit from their natural gas resources of the East Mediterranean region, through forming an integrated regional, cooperative system that utilizes the potentials and infrastructure of each country to benefit all producers, consumers and transit countries. In fact, signing the forum's statute is a significant step towards achieving this goal and will definitely contribute to the East Mediterranean region as an additional and reliable source of natural gas for Europe and worldwide with competitive prices. This will certainly change the dynamics of the international gas market. Moreover, other countries increasing willingness to join and participate in the activities of the forum is evidence that the forum has succeeded in setting a distinct model for international regional energy cooperation, which attracted the world's attention, as France has formally applied to join the forum as a member, in addition to the requests of the US and the United Arab Emirates (UAE) to join as observers. Therefore, I would like to assert that the Egyptian initiative for establishing the forum has already started to bear its fruits, in light of increasing activities of the forum, despite the current challenges of COVID-19. The high-level working group of the Forum has held its 8th meeting to review the forum's roadmap during the year 2021 and approved the requests for joining two additional members to the Gas Industry Advisory Committee (GIAC) to be 29 members from the most significant companies and institutions concerned with gas industry in the region, compared to 16 members since its establishment in November 2019.


NEW INTERNATIONAL OIL COMPANIES HAVE JOINED THE PETROLEUM SCENE RECENTLY IN EGYPT. HOW DOES THEIR INVOLVEMENT PLAY A ROLE IN TURNING EGYPT INTO A REGIONAL ENERGY HUB?

## HOW CAN RECENT INFRASTRUCTURE AND PORTS PROJECTS HELP EGYPT TURNING INTO AN ENERGY TRADE HUB?

As I mentioned before, the entry of new major IOCs in Egypt's upstream activities, in addition to expanding the activities of the currently existing ones, was due to their confidence in the improved investment climate in Egypt recently. These companies aspire to benefit from the integrated system of cooperation, which the EMGF countries are working on, in intensifying their activities, not only in Egypt, but in the entire region as well. This shall take effect by utilizing the existing infrastructure in the region and maximizing the economic results from the discovered gas or in the future. These companies' increasing interest to invest in the region, came in parallel with EMGF Statute signing, through participating in the activities of the forum's GIAC, which enables fruitful cooperation among the countries as well as investors in regional gas projects

As for the infrastructure and its role, the Ministry of Petroleum and Mineral Resources' strategy is based on modernizing the infrastructure and upgrading the refineries and pipelines that support Egypt's potentials, such as the unique geographical location, the strong flexible infrastructure and the expanded pipeline grid. In addition, Egypt is working towards upgrading its petroleum terminals such as El Hamra Port, which recently witnessed the inauguration of the Maritime Shipment Facilities Development Project. We also have two liquefaction plants in Idku and Damietta, an FSRU unit in Ain Sokhna, SUMED pipeline, and the Suez Canal, which is one of the most important maritime navigational canals in the world, in addition to the distinguished and qualified human cadres. All these factors enable Egypt to become a regional energy hub.

AFTER ESTABLISHING EMGF, INDUSTRY LEADERS KNOW THAT COMING HERE DOES NOT MEAN COMING TO EGYPT ONLY BUT TO THE REGION.

## THE ECONOMIC REFORMS HAVE PROVEN THE GOVERNMENT'S CREDIBLE COMMITMENT TO INVESTORS AND THEIR INVESTMENTS, AND THAT WE ARE WALKING THE TALK.

THROUGHOUT THE YEAR, THE SUCCESS OF EGYPT'S PETROLEUM SECTOR HAS ATTRACTED THE ATTENTION OF SEVERAL NEIGHBORING COUNTRIES WHO SOUGHT EGYPT'S EXPERTISE AND COOPERATION. COULD YOU PLEASE HIGHLIGHT SOME OF THE IMPORTANT AGREEMENTS IN THIS REGARD?

Egypt's international relations are witnessing an unprecedented boost, particularly with neighboring countries, in light of the political leadership conscious perception of the international cooperation significance in dealing with challenges and achieving development plans. These continuous efforts exerted by the government improve the image of the Egyptian economy before the world with regard to the investment opportunities it provides. As a result, the countries and economic organizations' growing confidence in the business climate of Egypt has contributed to opening new horizons for cooperation and partnership with Arab countries. Thus, we have adopted a mechanism for cooperation and triple integration between Egypt, Jordan and Iraq in the field of oil and gas, as the Iraqi side seeks to expand cooperation with Egypt and Jordan in implementing natural gas projects for the benefit of all parties. Furthermore, Egypt and Jordan are working together to enhance joint cooperation and Egyptian expertise, in the field of household natural gas activities, in particular. Moreover, in the coming period, other mechanisms will be studied to support joint bilateral cooperation between Egypt and Iraq, after the successful visit of the Iraqi delegation, by taking advantage of the diversified Egyptian expertise and the appealing opportunities in the Iraqi market within the framework of the "Reconstruction in Exchange for Oil" mechanism. On the regional level, there are several other projects for regional cooperation which are being studied among the activities of the EMGF which targets achieving maximum utilization of the East Mediterranean gas and providing an additional reliable source of natural gas for Europe.


LAST YEAR WITNESSED THE INAUGURATION OF PETROCHEMICAL MEGA PROJECTS. CAN YOU PLEASE CAST LIGHT ON THE MINISTRY'S PLAN TO MAXIMIZE THE POTENTIALS OF THIS PROMISING SECTOR?

Recently, the petrochemicals industry has witnessed unprecedented attention due to its importance as one of the national economy main pillars that achieves high added-value from natural gas. Actually, a number of petrochemical projects were inaugurated and operated during the last period as well as modernizing the petrochemical strategy to embrace the country's needs until 2040. A number of petrochemical projects started implementation in 2020, with total investments of \$8 billion, including; Medium-Density Fiberboard (MDF) Production Project that depends on rice straw as raw material instead of burning it, in order to protect the environment. The Refining and Petrochemical complex in the Suez Canal Economic Zone (SCZone) of the Red Sea National Company for Refining and Petrochemicals will also contribute in meeting the local market needs of petroleum and petrochemical products and export the surplus. There are also other projects under study, to be implemented in the coming period
(5) $\begin{gathered}\text { Petrochemical Projects } \\ \text { Investments }\end{gathered} \$ 7.9$ billion

MINERAL RESOURCES IS AN INTEGRAL SEGMENT IN THE MINISTRY'S STRATEGY. WHAT WERE THE MAIN ACHIEVEMENTS WITNESSED IN 2020? DID EGYPT BEGIN TO REAP THE FRUITS OF THE NEW MINERAL RESOURCES LAW?

Of course, issuing the new law and its executive regulations gave momentum to the mining activity and we started to reap its fruits. Last November, we announced the results of the international bid round for gold and associated minerals exploration, where 23 interested companies bought the data packages, despite the repercussions of the COVID-19 pandemic, which is an unprecedented investment

> EGYPT DOES NOT ONLY HAVE A LARGE CONSUMER BASE, BUT ALSO HAS POTENTIALS FOR GROWTH, THE PROPER LAWS, AND AN OPEN MARKET THAT IS ATTRACTING INTERNATIONAL INVESTORS AND IS OPEN FOR TRADE.
of high demand. Seventeen companies submitted their offers, 11 of them were awarded 82 blocks in the Eastern Desert, standing for 28\% of the total blocks offered with a total minimum investment commitment of $\$ 60$ million in the early stages. Seven international companies won this bid round, one of which is Barrick, the largest company worldwide in gold mining along with four national companies.

Moreover, 2020 has witnessed new commercial discovery, in the Eastern Desert at IQAT area, and it was achieved by the Egyptian Shalateen Mineral Resources Company. The discovery holds reserves exceeding 1 million gold ounces with an extraction percentage of about $95 \%$, which is considered one of the highest percentages ever.

皆 ${ }^{-9}$ GOLD BID ROUND RESULTS

-1. - NEW COMMERCIAL GOLD DISCOVERY


> WE ARE A PART OF A BIG COUNTRY THAT IS CHANGING AND THAT REQUIRES THE OIL AND GAS SECTOR NOT ONLY TO ADD VALUE, BUT ALSO TO CONTRIBUTE AS EXPECTED.

## THE FIRST STEP TOWARDS THE MINING AMBITION HAS REAPED FRUITS IN SPITE OF COVID-19 WITH A VERY SUCCESSFUL BID ROUND AND VERY SATISFYING RESULTS.

## ARE THERE ANY PLANS FOR OTHER BID ROUNDS FOR OTHER MINERALS IN NEAR FUTURE?

Currently, the mining sector's contribution to the state's gross domestic product (GDP) is $0.5 \%$ and we seek to raise it to reach $5 \%$ by 2030. Therefore, separate and independent strategies for each mineral will be implemented during the next phase for achieving the added value of the produced ore and benefiting from it, and instead of exporting the ore in its raw state, it is provided to a local factory or company to be used in the industry. Hence, we have set a road map aiming at annual investments results of $\$ 750$ million for the year 2030 by continuing to offer bid rounds, not only for gold, but for other minerals as well, throughout the year. Actually, we have launched a second round for the remaining areas of the first bid round including 208 blocks, on an area of 38,000 square kilometers (km2) in the Eastern Desert for the exploration of mining ores in a new tradition, which is the continuous bidding throughout the year and the quarterly announcement of the results achieved and the blocks that have been awarded. Other areas are offered once again for bidding, which provides continuous opportunities of gold mining investments. Furthermore, a new international bid round has been announced for the exploration of ores and associated minerals, starting November 19 until mid-March 2021, including iron, phosphates, copper, white sand, feldspar, potassium salts, lead, zinc, kaolin and Lake Nasser deposits in several blocks. We have added new evaluation criteria to be applied, including the added value achieved by the investor, throughout the processing and transformation operations of the extracted minerals.

## TNEW BID ROUND FOR MINERAL RESOURCES



## COULD YOU PLEASE PROVIDE US WITH A GLIMPSE OF THE MINISTRY'S VISION IN 2021?

In 2021, we plan to complete a number of new projects in the field of developing and increasing the production of crude oil and natural gas, refining, and infrastructure. Furthermore, we plan to accelerate the implementation of existing and extended projects in the upstream domain, as well as maximizing production capacities in refining and petrochemicals. The added value of infrastructure will transform Egypt into a regional hub for oil and gas trade.

## THE MINISTRY OF PETROLEUM AND MINERAL RESOURCES'

 INREVIEW

Outstanding Performance Supported by Economic Reforms Despite COVID-19 Challenges

## SPECIAL REPORT

PREPARED BY

# THE MINISTRY OF PETROLEUM AND MINERAL RESOURCES' ACHIEVEMENTS IN 2020 <br> OUTSTANDING PERFORMANCE SUPPORTED BY ECONOMIC REFORMS DESPITE COVID-19 CHALLENGES 

$D$espite the challenges imposed by the COVID-19 in 2020, the Ministry of Petroleum and Mineral Resources has managed to accomplish significant achievements that were only possible due to hard work and the scientific and practical approach that was observed throughout the year.

Even under the difficult circumstances of the pandemic, Egypt managed to become one of the few countries that were able to achieve economic growth in 2020. This came as a result of the integrated economic, developmental and social reform plans, which were supported by political and economic stability.

During the pandemic, the petroleum sector was able to achieve remarkable operational results, while observing all the health, safety and environment (HSE) conditions as well as the precautionary measures for keeping employees safe and preserving the facilities and equipment in addition to guaranteeing production sustainability. The achievements proved the consolidation and strength of the reforms conducted by the ministry and the flexibility of the sector's working plans and strategies.

The MoP has taken many precautionary and preventive measures in all petroleum sites and facilities in line with the country's plans to limit the spread of the coronavirus. The ministry developed flexible work programs that do not affect the production plans of all petroleum activities that play a vital and strategic role to support the national economy. The ministry focused on supporting the necessary manpower in the petroleum fields and production sites with periodic medical check-ups in addition to providing the onsite medical department with the needed capabilities. The ministry also allowed each department to determine the necessary number of people needed for operations to

## ensure the continuity of the production process.

The ministry made sure to sanitize the sites and buildings belonging to oil sector companies regularly, in addition to providing the necessary cleaning supplies. The ministry followed up on the situation with the petroleum sector's Supreme Medical Council in addition to forming a sub-emergency committee.

Co-operation Petroleum Company (Copetrole) and Misr Petroleum were also commissioned to provide disinfectant gel products and sanitizers with $70 \%$ alcohol concentration. Both companies made the products available for the public in all their outlets and supply stations at reasonable prices. Additionally, the Suez Safety Outfitters (SSO) Company produced cloth masks with standard specifications. To support the Ministry of Health and Population (MOHP), MoP in collaboration with international oil companies (IOCs) operating in Egypt, donated about EGP 4.5 million to fund the purchase of medical supplies and Personal Protective Equipment (PPE) including protective clothing, masks, goggles, and other preventive medical supplies.

It should be noted that despite the pandemic, the ministry signed 14 exploration and production (E\&P) agreements with IOCs from March to October 2020.

AGREEMENTS DURING THE PEAK OF
COVID-19


Duration
Mar-Oct 2020


Signed Agreements 14

PRESIDENTIAL SUPPORT FOR PETROLEUM SECTOR IN 2020

The year 2020 has witnessed continuous support from the political leadership, which was keen to follow up progress rates of the petroleum sector's plans and its ambitious projects. Throughout the year, President Abdel Fattah Al-Sisi conducted several meetings with Prime Minister, Mostafa Madbouly, and the Minister of Petroleum and Mineral Resources, Tarek EI Molla, which, in many cases, were also attended by chairmen of international oil companies (IOCs) operating in Egypt.

The President also was keen to personally inaugurate and visit oil and gas projects and events. The President's field visits included the opening of Egypt Petroleum Show (EGYPS 2020) in its fourth edition; the expansion project of Alexandria National Refining and Petrochemical Company (ANRPC); the Egyptian Refining Company (ERC) project in Mostorod and the final driling operations of Ahmed Hamdy Tunnel 2 which Petrojet has participated in its execution.

On the governmental level, Prime Minister Mostafa Madbouly has continuously supported and reviewed the efforts exerted by the oil, gas and mineral resources sector. Madbouly was keen to offer the necessary help to the sector to overcome any challenges, increase investments and maximize its contribution to the country's development. Early in the year, Prime Minister issued the new executive regulation of the mineral resource law no (145) of 2019 after its amendment.

Madbouly also followed up the implementation situation of the ministry's projects. He personally inspected the facilities of Al Hamra Petroleum Port in New Alamein on the Mediterranean coast. He also gave the green light to operate the new offshore 36 inches transportation line with a length of 8 kilometers (km) as well as the new offshore buoy in order to increase the shipping capacity to 1 million barrels per day ( $\mathrm{mmb} / \mathrm{d}$ ) of crude oil with investments estimated at about $\$ 100$ million.

INAUGURATION OF THE NEW SHIPPING PIPELINE AT EL-HAMRA PORT


8 km

$\checkmark$
Diameter
36 inches
 Target Increase Shipping Capacity to 1 mmbы/d
$\$$
Investments
$\$ 100$ million

## ENHANCING EGYPT'S OIL AND GAS RESOURCES AND RAISING THE PRODUCTION RATES

The Ministry of Petroleum and Mineral Resources (MoP) continued to boost the country's resources of oil and gas and raise the production levels by adding new economic discoveries throughout the year.
SIGNED AGREEMENTS
WITH IOCS


NEW DISCOVERIES ACHIEVED


47
Crude Oil


Location


15
Natural Gas

Mediterranean Sea Eastern Desert Western Desert Gulf of Suez Nile Delta

## 42 <br> DEVELOPMENT LEASES



SEISMIC SURVEYS

Company
Surveyed Area (km²)
345
GUPCO
100
Nepton

The MoP also finalized the launch of Egypt Upstream Gateway (EUG) to promote the petroleum exploration areas internationally. It was implemented at rapid rates that align with the state's plans to support digital transformation. .

## REDUCING IOCS' ARREARS

Continuing the efforts to reduce the arrears of the foreign companies, the ministry succeeded in reducing the accumulated arrears to an unprecedented value estimated at $\$ 850$ million by the end of June 2020, a decrease of $87 \%$ compared to 2013 when it reached $\$ 6.3$ billion. This issue was one of the main challenges which affected the oil
and gas exploration and production investments. Furthermore, this will be an incentive for pumping more investments, intensifying E\&P operations and accelerating the development of discoveries that can achieve higher production rates.

ARREARS DEVELOPMENT (\$ BILLION)


## PETROLEUM PRODUCTION INDICATORS

PETROLEUM PRODUCTION (MMT)


## AVERAGE PRODUCTION RATES

## $638,000 \mathrm{mmt} / \mathrm{d}$

Crude Oil, Condensates \& Butane
6.6 bcf/d

Current Natural Gas
7.2 bcf/d

Natural Gas Production Capacity

IMPLEMENTED PROJECTS OVER THE PAST 6 YEARS

29
Number of Projects
EGP 437 billion
Investments

EGYPT'S RANK IN NATURAL GAS PRODUCTION

THE LOCAL CONSUMPTION OF PETROLEUM

PETROLEUM PRODUCTS AND NATURAL GAS CONSUMPTION

- Consumption (mmt) YoY Change

| $\biguplus$ | Total |  |
| :---: | :---: | :---: |
|  | 71.3 | $\checkmark 5.9 \%$ |
| $\theta$ | Natural Gas |  |
|  | 45.2 | $\checkmark$ 1\% |
|  | Petroleum Products |  |
|  | 26 | $\checkmark$ 13\% |

PRODUCTS AND NATURAL GAS

NATURAL GAS CONSUMPTION BY SECTOR (\%)
60.4


## UPGRADING THE SERVICES DELIVERED TO CITIZENS

CAR SERVICES \& SUPPLY STATIONS

| 135 | Added in 2019 | 115 | Added in 2020 |
| :--- | :--- | :--- | :--- |
| 3,780 | country's Total | $\mathbf{3 2 5}$ | 2021 Target |

## CYLINDERS DISTRIBUTION CENTERS

## 38

Added in 2019

Added in 2020

3,078
Country's Total

NATURAL GAS DELIVERY

| Residential Units (million) |  | 2019 | 2020 | Since Start of Operating |
| :---: | :---: | :---: | :---: | :---: |
|  |  | 1.2 | $+1$ | 11.7 |
| 曲 | Commercial Units | 2,013 | 1,528 | - |
| - | Factories | 56 | 47 | - |

## CARS CONVERTED TO NATURAL GAS



PETROLEUM PROJECTS

1. OIL \& GAS EXPLORATION, PRODUCTION, AND DEVELOPMENT PROJECTS

MAJOR DEVELOPMENT PROJECTS


ADDED PRODUCTION
Natural Gas

(bcf/d) | Condensates |
| :--- |
| (bbl/d) |

## A. NATURAL GAS PRODUCTION AND DEVELOPMENT PROJECTS

## COMPLETION OF PHASE 9B DEVELOPMENT PROJECT IN WDDM

PROJECTTARGETS


PRODUCTION UPDATES


COMPLETION OF SOUTHWEST BALTIM DEVELOPMENT PROJECT IN MEDITERRANEAN

PROJECTTARGETS

Production
Investments
385 mmcf/d
\$363 million

UPDATES IN 2020

Wells Brought Online 2
Drilling
4 Wells

- $225 \mathrm{mmcf} / \mathrm{d}$ Natural Gas
- 1,700 bbl/d condensates

KATTAMEYA FIELD IN MEDITERRANEAN

Natural Gas
$100 \mathrm{mmcf} / \mathrm{d}$

TARGETED PRODUCTION


COMPLETION OF DEVELOPMENT OF NORTH ALEXANDRIA \& WND FIELDS (3 ${ }^{\text {RD }}$ PHASE- RAVEN FIELD)

PROJECTTARGETS


ADDITIONAL PROJECTS IN NILE DELTA AND WESTERN DESERT

UPDATES OVER JAN-OCT 2020


## B. CRUDE OIL PRODUCTION AND DEVELOPMENT PROJECTS

# NORTHWEST OCTOBER FIELD DEVELOPMENT PROJECT- GULF OF SUEZ- GPC 

PROJECTTARGETS

Expected Increase in GPC's Production

## $3,800 \mathrm{bbl} / \mathrm{d}$

Diameter: 5 inches

Length: 22 km

Establish

## Maritime Platform

Complete Drilling
Start Drilling
Investments

## 2 Pipelines

2 wells
1 Wells
\$37 million

## ADDITIONAL PROJECTS FROM DIFFERENT COMPANIES

UPDATES OVER JAN-OCT 2020

Wells Brought Online
190

Initial Production Rates
$156,000 \mathrm{bbl} / \mathrm{d}$

## A. IMPLEMENTED PROJECTS

INAUGURATION OF ERC REFINERY

PROJECT TARGETS


Convert Mazut to
High Value Products


Investments


INAUGURATION OF HIGH-OCTANE BENZENE PROJECT AT ANRPC


Targeted Production

## 700,000 t/y

TRIAL OPERATION OF HIGH-OCTANE BENZENE PRODUCTION UNIT AT ASORC

## PROJECTTARGETS

$800,000 \mathrm{t} / \mathrm{y}$
$\$ 450$ million

## B. UNDER-EXECUTION PROJECTS

MIDOR EXPANSION PROJECT

## Target

Increase Refinery's Capacity by $\mathbf{6 0 \%}$

## investments

\$2.3 billion

DIESEL COMPLEXATANOPC

Target
Convert $\mathbf{2 . 5}$ mmt/ y of Mazut to High Value Products

## estments

\$2.9 billion

ASPHALT PRODUCTION UNIT AT SOPC

Production
$400,000 \mathrm{t} / \mathrm{y}$
nvestments
\$64 million
3. PETROCHEMICAL PROJECTS

4. INFRASTRUCTURE PROJECTS

## A. CRUDE OILAND PETROLEUM PRODUCTS PIPELINES


B. NATIONAL GAS GRID PROJECTS

C. INCREASING STORAGE CAPACITY

SONKER'S TERMINALAT AIN SOKHNA
Established
Tankers
3 Butane and Diesel Pipelines
Platform

Investments
\$450 million

## EMGF ANNOUNCED AS AN INTERNATIONAL ORGANIZATION HEADQUARTERED IN CAIRO

Egypt had taken the initiative to establish the East Mediterranean Gas Forum (EMGF) two years ago, during the trilateral summit held in Crete between Egypt, Cyprus, and Greece. The idea was widely accepted by most of the region's countries, whether producers, consumers, or transit countries.

The EMGF was formally established in less than 20 months after the signing of the forum's charter by the seven founding countries in September 2020. According to the charter, the EMGF would be headquartered in Cairo. The forum is an example of regional cooperation
as the member countries agreed on achieving one goal, which is maximizing the benefit of the East Mediterranean wealth for its people. This is set to be achieved through joint integration and through using the existing infrastructure owned by each country for the economic benefit and at the least possible cost. The EMGF goal aims to benefit producers and consumers at the same time as the natural gas will be available to the world at competitive prices. The success of the EMGF attracted countries like France, the US, and the United Arab Emirates (UAE) to participate in the forum as permanent members or as observers.

## EFFECTIVE STEPS IN TURNING EGYPT INTO AN OIL \& GAS REGIONAL TRADING HUB

As part of the oil and gas sector's Modernization Project, the ministry of petroleum is adopting a strategy to turn Egypt into a regional oil and gas trading hub. This strategy includes three main levels, internal; political; and technical. These levels are being executed under the belief that Egypt's leadership and vision to be a regional gas hub will benefit all countries

- Strategy-setting completion by assigned team and authorization by the cabinet
- Establishing the EMGF to include natural gas producing countries, as well as importers and transit countries around the East Mediterranean to boost cooperation and create a regional natural gas market.
- Signing agreement between Egypt and Cyprus to encourage investors to establish a marine pipeline to move gas from the
in the region through integration and cooperation. This cooperation will lead to achieving economic benefits and using energy investments as a tool of peace in the region. During 2020, many steps have been taken in order to achieve this strategy, including:


## Aphrodite field to Egypt's liquefaction plants to be re-exported.

- Needed agreements are being prepared to be signed with investors to execute the project of connecting Cypriot gas fields to Egyptian liquefaction plants.
- Several projects have been executed to boost refineries' efficiency. Additionally, many projects aimed to develop the systems of storage, transport, trading and distribution of petroleum products.


## THE OIL \& GAS SECTOR MODERNIZATION PROJECT AND SUPPORTING THE NATIONAL ECONOMY

In light of boosting the oil and gas sector's ability to cope with the modern era as well as the local, regional, and international challenges, in 2016 the sector started executing an ambitious modernization project. The project aims to develop the sector in order to increase its contribution to Egypt's comprehensive development. This goal is set to be achieved through working more efficiently, attracting investments, and developing human capital. During 2020, the sector witnessed many achievements, including boosting the investment climate in the area of oil and gas E\&P, which resulted in attracting major IOCs to invest in Egypt for the first time, including ExxonMobil and Chevron.

Additionally, for the first time, the sector used enhanced methods to promote investment opportunities in the oil and gas E\&P as Egypt is preparing for establishing the first investments digital gateway; the EUG. The gateway will make geological data available for companies that are interested in investing in Egypt. This will be a new leap in promoting the E\&P opportunities and bid rounds using the fastest and
latest techniques. The EUG's returns will be positive as it will contribute to attracting investments. The gateway is considered a successful deployment of the technological and digital solution in increasing the investments' attraction.

Meanwhile, the MoP has taken tangible steps to develop the human capital and prepare young leaders through a successful initiative and executing the first round of the young professionals' program to train young talents. A group of young leaders joined the program after long and vigorous tests to select the most qualified applicants. The program then worked on preparing these talents to be armed with scientific and technical skills to be able to run major future projects and continue on the path of success. In 2020, a second round of the program has been announced for selecting a number of talents and preparing young and middle professional leaders.

## INTERNATIONAL BID ROUND FOR GOLD EXPLORATION



GOLD BID ROUND- SECOND PHASE


GOLD BID ROUND RESULTS


Awarded Companies 11 International: 7 National: 4


## NEW BID ROUND FOR MINERAL RESOURCES



NEW COMMERCIAL GOLD DISCOVERY

Investments over 10 Years
\$1 billion


## LAUNCHING MINERAL RESOURCES EMPLOYEES TRAINING PROGRAM

${ }^{\text {st }}$ Phase Trainees
60

## $2^{\text {nd }}$ Phase Trainees 110

## MOP'S TARGETS FOR MINERAL RESOURCES SECTOR



Sector's Share in GDP in 2030 5\%

MINISTERIAL PARTNERSHIPS FOR INTEGRATION AND COLLABORATION

The year 2020 witnessed ministerial integration and application of successful joint action initiatives to achieve sustainable development goals. One of the most important initiatives is the Higher Committee for Environmental Compliance and Reform.

In 2020, the MoP and the Ministry of Environment began implementing a plan to achieve environmental compatibility in petroleum sites through the Higher Committee for Environmental Compliance and Reform which is headed by both ministers. Through continuous coordination between the two ministries, both ministers followed up on the integrated plans aligning with environmental standards stipulated by the Environment Law and its executive regulations. This initiative follows the directives of the Prime Minister to reach radical solutions to the industrial drainage issue in line with the Environmental Protection Law.

The Ministry of Environment reviewed and completed the environmental reform plans of the General Petroleum Company's (GPC) Ras Sidr field in South Sinai and East Zeit Petroleum (ZEITCO) in the Red Sea. Besides, the two companies' industrial drainage issue on the marine environment was permanently stopped.

The Ministry of Environment carried out environmental audits and evaluated the implementation rates of environmental reform plans as per the schedule between the two ministries. The audits were for the following companies: the Gulf of Suez Petroleum Company (GUPCO), Nasr Petroleum Company, Suez Oil Company (SUCO), Petro Gulf, Amal Petroleum Company (AMAPETCO), and GPC. The ministry managed to implement $40 \%$ of the reform plans by the end of October in line with the approved schedule set by the Egyptian Environmental Affairs Agency (EEAA)

## TANGIBLE MEASURES TO SETTLE FINANCIAL DISPUTES

In addition to that, the MoP signed cooperation protocols to resolve financial disputes between four ministries, namely MoP, Ministry of Finance (MoF), Ministry of Electricity and Renewable Energy (MERE), and the Ministry of Public Business Sector. The protocols aimed to settle the debt owed to MoP by some companies affiliated with the Ministry of Public Business Sector for their natural gas withdrawals. Additionally, disputes between the Egyptian General Petroleum

Corporation (EGPC), the Egyptian Electricity Holding Company (EEHC), MoF, and MERE were resolved and they agreed on future rules and paying off the sectors' fuel withdrawals. The Ministry of Public Business Sector also agreed to transfer ownership of some of their real estate assets to the MoP as a way to settle its debt.

## NATURAL GAS DELIVERY TO LOCAL BAKERIES INITIATIVE

In 2020, the MoP signed a protocol with the Ministry of Local Development and the Ministry of Supply and Internal Trading to deliver natural gas to local bakeries for the first time. The agreement is considered a huge leap in reducing the consumption of traditional fuels, saving costs, and supporting the environmental aspect by using natural gas as clean energy.

In the end, despite the challenges it has witnessed, the petroleum sector achieved outstanding results in 2020. This will remain a milestone in the sector's distinct approach and flexible strategy which aims to unlock the reservoirs. The data and figures are proof of the sector's achievements over the past four years in addlition to approaching a professional economic manner when it comes to production or providing services.

# ENERGEAN'S CEO MATHIOS RIGAS TALKS ABOUT EDISON E\&P ACQUISITION AND NEW INVESTMENTS 

## EnERGEAN

## ENERGEAN IS A MAJOR EXPLORATION AND PRODUCTION (E\&P) COMPANY IN THE MEDITERRANEAN, COULD YOU ELABORATE ON THE COMPANY'S ACTIVITIES?

Energean is a company that I started back in 2007 when we bought the only oilproducing asset in Greece. Back then it was and still is an asset that is producing oil, it was the only production in Greece with a small production of 2,000 barrels a day. Since then, we started the growth of making Energean what it is today, the leading independent E\&P company in the Mediterranean. So, from the start in 2007 to where we are today, we started with 2 million barrels oil equivalent of 2 p reserves and today, we have ended up 2020 with 974 million barrels of oil equivalent of 2 p reserves.

We started with a couple of employees and now we are more than 600 and if you add the Abu Qir Petroleum joint venture ( JV ), that makes more than 1,300 employees. We ended 2020 with more than 50,000 barrels of oil equivalent (boe) and a presence in nine countries. With the acquisition of Edison, Energean is present in Italy, Egypt, UK, Croatia and Malta, of course in Israel, with a major investment of $\$ 1.7$ billion in the development of Karish and Tanin, as well as in Greece and Cyprus. A truly multinational company totally focused in the E\&P sector and totally focused in the East Mediterranean.

I originally come from Greece and I think one of the key benefits for me is; knowing and loving the Mediterranean and understanding the culture of the people in the region, [which] has been a major reason that we were successful in building this business. I have to say that doing business in Greece is no different than doing business in Egypt, or Italy or Israel. I will give you a small example, in Greece, in the last 12 years I have worked with nine prime ministers and 14 ministers of Energy. In Italy, there have been continuous changes in the scene. In Egypt, in the last 12 days we have witnessed all the political changes from the previous regimes to where we are today. In Israel, the fourth election in a two-year period was announced at the end of 2020. So, you have to understand change, you have to understand how Mediterranean people work and live.

## WHAT ARE THE RECENT UPDATES ON THE EDISON E\&P ACQUISITION?

The acquisition of Edison closed at the end of 2020 and it is a major milestone for us because it gave us access not only to assets and production but also to a fantastic team that was built by Edison. The team is still managing the assets based in Milan and Cairo primarily, but also in the other countries; Croatia and the UK.

The key asset in the Edison portfolio was and still is the Abu Qir gas production and this was one of the key reasons for the acquisition. Egypt for Energean is a core country for operation; it is a very important country for us where we have been operating for a long period of time. We were before operators of East Magawish and West Kom Ombo, where we drilled exploration wells without the success we wanted, but that is the nature of our business; exploration has its risks. So, for us, it was very important to build an important and significant presence in Egypt. So, one of the key reasons why we bought Edison and closed after approval from the various governments was to increase our presence in Egypt

It was not an easy process and doing any deal in 2020 has been extremely challenging; 2020 has been probably the most difficult year that I have lived in my professional career. Not only we had COVID-19, the restrictions, the difficulties in operating, the difficulties in moving to see countries and people, but we also had a big crash of the oil price. We had big funds and banks pulling out of the industry making funding for acquisition or deals very difficult. So, 2020 was a very tough year for everyone, but we managed to close successfully in very close cooperation with Edison.

I want to extend a big "thank you" to H.E. Tarek El Molla who supported us together with the Egyptian General Petroleum Corporation (EGPC) and the Egyptian Gas Holding Company (EGAS) to obtain all the necessary approvals that were required in the country. Egypt has been very supportive and as I said before, we consider Egypt a key country for operations for us.

## WHAT IMPACT WILL ENERGEAN'S ACQUISITION OF EDISON E\&P HAVE ON THE COMPANY IN THE SHORT-TERM AND LONGTERM?

The impact is huge because Energean before the acquisition of Edison was a company that had a small oil production in Greece and a huge project that we are running in Israel that will be delivering gas at the end of 2021. Energean today, with the acquisition of Edison E\&P, is a company that has multiple countries of operation and different areas of production. So, the production of Edison E\&P's assets, primarily Abu Qir and Italy, filled the gap between where we were before and the start of production from Israel.

Karish production will bring our total numbers to app. 200,000 boe per day and we will totally be focusing on gas. More than $70 \%$ of the reserves and resources that we have in the portfolio are gas; we want to focus on gas. The Edison E\&P portfolio was focused on gas, so it was a very nice fit for us.

The second big change is that it added a significant strength in our technical capabilities from the people based in Milan, Cairo, the UK, and other countries of operation. So, it complements very nicely our team from a technical capability's perspective. So, all in all, I think it is one of those cases where $1+1=3$ ! There is no overlap in any of the countries

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ONE OF THE KEY REASONS WHY WE BOUGHT EDISON E\&P AND CLOSED AFTER APPROVAL FROM THE VARIOUS GOVERNMENTS WAS TO INCREASE OUR PRESENCE IN EGYPT.
of operation, there is a lot of complementarity in terms of the people and there are assets that are in line with our strategy to be gas-focused in the Mediterranean.

## THE DEAL WITH EDISON WILL CREATE ONE OF THE LARGEST E\&P COMPANIES LISTED ON THE LONDON STOCK EXCHANGE (LSE). PLEASE TELL US MORE ABOUT THE OPPORTUNITIES THAT WILL BE UNLEASHED DUE TO THIS HUGE FINANCIAL STEP?

Energean today is the largest independent E\&P company listed on the LSE market cap with $\$ 1.7$ billion. I remind you we started 13 years ago from nothing to be the leader on LSE. We were listed in March 2018 and this was the only initial public offering (IPO) that was done on the LSE in the sector for more than four years and there has not been an IPO done since then. In fact, a lot of the big companies, the leaders in the sector have had significant financial difficulties and have reduced in size dramatically over the last four or five years.

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## EGYPT IN THE MEDITERRANEAN IS THE

 COUNTRY THAT HAS THE LONGEST HISTORY OF OIL AND GAS PRODUCTION, THE MORE MATURE MARKET, THE MOST EXPERIENCED GOVERNMENT OFFICIALS THAT REGULATE THIS INDUSTRYIt is not easy to be an operator in the sector today; we are open to risk due to oil price fluctuation, we are open to and exposed to a sentiment that is away from oil and gas. A lot of institutions around the world are choosing to go greener, and a lot of governments are also choosing to move away from oil and gas. So, to be successful in this sector, be able to raise the amount of money we have been able to raise in the last three years, is a unique achievement in my view. Energean has raised more than $\$ 3$ billion over the last three years to fund the IPO, the Karish-Tanin project, and other activities of the group in Greece and other places, including the acquisition of Edison E\&P.

So, the market trusts Energean, the investors trust Energean, the banks trust Energean because we always deliver on our promises. We delivered the acquisition of Edison E\&P as we promised by year end. We will deliver the project in Israel that we will start to produce gas by next year. That is what investors want, they want to see a company that delivers on its promises; a company that is focused and committed. They want to see a company where management has a material interest in the shareholding - and we hold a big stake in the shares of the company. We care about shareholder value.

What I said before about the division in this industry and what people are thinking is very important to Egypt. Egypt has made a choice to produce oil and gas, to be selfsufficient, and to export oil and gas. Other countries, like Italy, have chosen not to produce or export oil and gas, but they are still using oil and gas. So, the countries that choose not to invest in oil and gas end up importing all their hydrocarbons. To remind you, the world is moving towards renewables, but still, the world needs oil and gas. People still need to drive their cars, need to use electricity, get heating, and petrochemicals So, there is a huge need for the products that we produce.

In a nutshell, the way I see the world developing right now is that companies like us work closely with governments like the Egyptian government to promote oil and gas investments in ta sector that has not only financial impact but also geo-political impact. It is extremely important for countries, in my view, not to rely on others for their energy needs and this is something some countries understand while some others for the sake of populism and votes, choose to talk only about renewables and forget the fact that oil and gas are still important.

## WOULD YOU AGREE THAT THE POSITIONING OF EGYPT IN THE MEDITERRANEAN, WITH ALL THE AVAILABLE INFRASTRUCTURE FOR EXPORTING TO THESE COUNTRIES THAT HAVE A RENEWABLE STRATEGY THAT WOULD REQUIRE THE GAS, IS AN IMPORTANT FACTOR IN THIS COMING DECADE?

Undoubtedly! Egypt in the Mediterranean is the country that has the longest history of oil and gas production, the more mature market, the most experienced government officials that regulate this industry, the largest presence of oil and gas operators of any country of the ones we operate in. Plus the existing infrastructure, the gas networks, the ports, the LNG terminals, the power stations, the petrochemical plants, the refineries; all that puts Egypt in a unique position to be the energy hub of the Mediterranean.

One of the biggest challenges people face in the East Mediterranean is how to get access to big markets. We operate and have signed contracts to sell 7.4 billion cubic meters per year (bcm/y) to the Israeli market, a market that consumes about $11 \mathrm{bcm} / \mathrm{y}$ and is growing further. So, we are going to become one of the major producers of gas tin Israel, in a market that has become self-sufficient and has started to export gas. But in order to attract more investments and justify drilling more wells, you need access to a much larger market. Those larger markets are the European market and Egypt. So pipelines that connect everyone are very important. The liquefied natural gas (LNG) terminals in Idku and Damietta will play a major role in becoming an export hub of gas in the region. So, we see Egypt as a key country for exporting gas not only to Europe but to the rest of the world. So, yes, Egypt can play an important role of becoming a hub for the region.

The EMGF that has been launched and is based in Cairo has a very important role to play, and we were one of the initial members of this forum being the only company that is present in almost all the countries that participate in it, while we are also looking to expand in the rest of the countries in the Mediterranean. EMGF is a very important organization. It has to improve in certain elements, but definitely the forum can play a major role in this energy transition sera and Egypt can definitely become a major hub of exports of hydrocarbons.

## HOW DOES THE DEAL WITH EDISON AFFECT ENERGEAN'S COMMERCIAL AND BUSINESS DEVELOPMENT IN EGYPT?

Energean is a major gas player in the country and Abu Qir is a very important asset in the gas production of Egypt. So, from a commercial standpoint, all the gas is sold to government entities, and EGAS and EGPC are the companies that buy all the hydrocarbons that we produce. So, for us, it is the start and foundation to build a bigger presence in Egypt. Abu Qir is an asset that has been in production since the late '70s, it is an asset that needs significant investments and we are absolutely ready to make these investments. In fact, the future of Abu Qir goes through a new investment program in North East Al-Amriya and North East Idku, a $\$ 240$ million investment that we are ready to sanction. That will happen in the next 18-24 months and bring the production levels of Abu Qir back up or even more than what they were in the last couple of years. So, we are ready to invest in Abu Qir and Abu Qir satellite fields, but we are also ready to invest in more assets in Egypt. For me, being present with Abu Qir in Egypt today, as I said before, it is the foundation, the platform base on which we want to grow the presence of Energean in Egypt.


## WHAT IS YOUR PLAN FOR OPERATIONS IN ABU QIR?

Abu Qir is a very well-run operation from Abu Qir Petroleum, the relationship with our JV partner is excellent, and I think we will continue operating the same way. Obviously, we will bring in the enthusiasm, the energy that comes from a committed E\&P investor, because EDF - the owner of Edison E\&P until recently- was not interested in E\&P and that was naturally reflected in the lack of investments in the assets over the last two years. Today, Abu Qir is owned by a company that is only investing in the E\&P sector, a company that has gas and Egypt as priorities So, I think the employees of Edison and employees of Abu Qir Petroleum will see a big positive change from a shareholder that is willing to invest, that wants employees' productivity , wants to become more efficient, wants to keep costs low because we need to be able to return money to our shareholders but is totally committed to the sector, and that is a huge change.

Speaking to my new colleagues at the Edison E\&P team, I sense a very positive momentum because they feel that a new era has started. So, they are moving from a shareholder that did not want to invest, that did not believe in the E\&P sector into one that is totally committed to the E\&P sector. I think that is a big change in what is going to happen also in Egypt. So not only we will be dedicated and not only we will focus on Abu Qir, but we will continue and invest in North East El-Amriya and North Idku project which has taken a very long time to sanction but it is ready to go now.

## ARE THERE ANY PLANS FOR OTHER ACQUISITIONS IN THE COMING PERIOD?

You cannot obviously pre-announce acquisitions, but as I said we are going to be totally focused in the Mediterranean, so that is our key area of focus. I have said it many times, we will only do business with countries that I can fly within three hours from Athens. That is a very simple rule we follow to stay focused. Companies like us need to understand the subsurface, the rocks, but they also need to understand and be able to operate in the above surface issues. I think Energean understands the above surface

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THE GROWTH ENERGEAN HAS SEEN OVER THE LAST DECADE HAS BEEN PHENOMENAL BUT EVERY TIME IT IS BUILT ON A SOLID FOUNDATION. SO, WE DO NOT RUSH GROWING FOR THE SAKE OF GROWING
issues better than anyone else in the region. It is proven by the fact that we operate in all these countries, so this is something that we need to take advantage of.

Will we buy more companies or more assets? For the time being, the priority is to integrate the Edison E\&P assets portfolio and people into our business, to deliver gas from Karish next year, to invest in North East Al-Amriya, North East Idku, to invest in other projects we have in the portfolio. There is a big investment in Italy; Cassiopea, there is a big investment in Greece called Epsilon, and another big investment in Israel called Karish North. So, we have a very active investment program in our existing portfolio before we go out and look for new acquisitions.

We will look at anything. We obviously look to add value to shareholders. But you have to remember, you have to have solid foundations; you have to have your feet on solid ground before you continue the growth/. The growth Energean has seen over the last decade has been phenomenal but every time it is built on a solid foundation. So, we do not rush growing for the sake of growing; being big is not what this game is all about. The sustainability and the business is what counts. For me, it is important to continue to grow and see Energean being a leader.

## ACCORDING TO THE COMPANY'S RESULTS FOR H1 2020, ENERGEAN'S ABU QIR EXCEEDED 2020 GUIDANCE. HOW DID THE COMPANY ACHIEVE THIS SUCCESS?

The success of 2020 is not attributed to us, it is attributed to the Abu Qir Petroleum team and Edison E\&P because we were not managing the asset. We were supervising obviously what is going on, but I have to give credit to the Egyptian team, to Nicholas Katcharov, who is running the business in Egypt as a general manager, to Aldo Costantini who is a general manager in Abu Qir Petroleum, and the rest of the team because I cannot name all of them.

As said earlier Abu Qir is an asset that needs investment, It is an asset we need to put money into to drill wells, go to new horizons; the facilities had a lot more capacity to produce. It is a very similar story with our Greek assets; huge facilities that are redesigned to take a lot more production than what we have today and we need to fill them with more gas, more condensate, and more products that will be going through them. Without new investments, Abu Qir will follow the natural decline of any gas field around the world.

So yes, 2020 was a successful year, but I think everybody needs to understand that Abu Qir needs money, needs investments, needs proper active management. Without that, Abu Qir will not exist in a few years' time. Together with that, we need to take
into consideration the jobs, the social impact, plus the impact that this field has on production. So, I repeat, Abu Qir needs investment; it cannot continue without more money going in

## BASED ON YOUR EXPERIENCE, HOW DOES THE EGYPTIAN GOVERNMENT SUPPORT FOREIGN INVESTORS ESPECIALLY IN THE OIL AND GAS INDUSTRY?

Egypt is a country that Energean has been operating in for over 11 years; it is my second home and I believe that this is reflected also in the relationship we have with the Egyptian government.

The Egyptian government, including the leadership of the E\&P sector under H.E. Tarek El Molla, is a government that promotes investments, that understands the need of investors, and makes us very comfourtable to make the decision to invest in North Idku in North East Al-Amriya. Throughout the process of the acquisition of Edison E\&P, we have seen a supportive government. Not all countries were the same, I can give you an example; Algeria was very different. Algeria sent a very negative message for us and they did not allow us to go and do the same thing we were going to do in Egypt. So, they lost the opportunity by not promoting this type of investment and the acquisition of the Edison E\&P assets in Algeria.

Egypt was very different. Egypt was very supportive, Egypt welcomed Energean as a bigger player and that gives us the confidence to continue to grow. Obviously, the country is going through difficulties like every other country in 2020 because of COVID-19; that has affected the country financially. That is reflected in the situation with receivables that everyone is experiencing and that needs to be improved. There is no doubt that this is a key message that will even further promote investments in Egypt.

We closed the acquisition of Edison E\&P that was funded by a number of international banks, and we closed with our Reserves Based Lending (RBL) facility that was primarily focused in Egypt's Abu Qir asset. So even the financial market and the banks gave a vote of confidence to Egypt. That means that the right company with the right assets can actually not only raise money but deliver big acquisitions in the country. It has been the case for everyone, and there has been a number of attempts in Egypt for acquisitions of companies and assets that did not materialize.

I believe governments and companies have to be very careful to choose the right companies they want to do business with because not everyone can deliver an acquisition in 2020 of that size. The countries that recognize that and sellers that recognize that end up with deals such as the acquisition of Edison E\&P. EDF managed to achieve their objective which was to exit the E\&P sector. Egypt ended up with a committed operator as opposed to an operator that wants to do different things. The choice of a committed company and an operator is extremely important for me when deals like that happen.

## COULD YOU ELABORATE ON ENERGEAN'S STRATEGY TO BE A NET ZERO EMITTER BY 2050?

In December 2019, we made a big commitment as the first E\&P company in the world to commit to becoming a net-zero emitter. What does a net-zero emitter mean? We have Scope One and Scope Two emissions. Scope One are emissions that we generate through our operations, where we burn gas or oil for our operations, we use our compressors, power stations, etc. Scope Two are the emissions that are generated from the use of energy that we buy from third parties. So, we committed that the total Scope One and Two emissions in Energean will end up in a net-zero position by 2050 and some people may say "by 2050, you will be 85 years old, you probably will not be around. So, you are making a commitment for a day you will not be around."

It is absolutely not the case; these are major statements and moves we make that take time and are followed by immediate actions. The first plan is to reduce our carbon

## 66 <br> WE SIGNED AN AGREEMENT TO BUY ONLY THE ELECTRICITY WE NEED FOR OUR PLATFORMS AND INSTALLATIONS IN PRINOS ONLY FROM RENEWABLE SOURCES. THAT REDUCED OUR CARBON FOOTPRINT BY 45\%.


(CO2) intensity by $70 \%$ in the first three years of our commitment. We will continue to reduce the CO 2 intensity until we reach our target to become a net-zero emitter. That is a message that is not easy to make. Some people may say "you are an oil and gas company; how can you get there?"

The answer is very simple. First, by focusing on gas. Second, by buying electricity from renewable sources. In Greece 2020, we signed an agreement to buy only the electricity we need for our platforms and installations in Prinos from renewable sources that reduced our carbon footprint by $45 \%$. We are becoming more efficient; we will be looking at Abu Qir operations and trying to improve efficiency as much as we can. Then once we have reached the limit the next step will be to focus on carbon capture and storage (CCS) projects where we actually reverse instead of emitting CO2. That is the role oil and gas companies can play in the future and oil and gas companies have unique know-how, not only to drill wells, to manage reservoirs, put projects together, but also to manage CO2 emissions.

So, turning old assets into CO2 storage areas is going to become a top priority for Energean and this is something we will also be discussing with the Egyptian government because I think that is a key topic that should be discussed. I would invite the next [EGYPS show to have that as a topic of discussion. It is becoming a major theme in Europe; there are at least 25 projects of CCS being developed at the moment in the European Union (EU). I think that needs to be a trend that is followed also by countries like Egypt and other places where there is still hydrocarbons as a key area of production.

Moving into CCS, enhanced oil recovery (EOR) projects and reversing the emissions of CO2 is going to be a top priority for us. So, the net-zero big commitment that we made shows that Energean is going to be a leader in the sustainability side of the business. We are not afraid to talk about these issues and we are not trying to hide the fact that we produce oil and gas; that is a fact of life. The question is: Are you producing it efficiently? Are you doing everything you can to be sustainable? Are you doing everything you can to get to that target of net-zero? And what is the cost of getting there?

We are committed to get there and that is something that our investors in London and in the world recognize because we have a sustainability report that is very open and transparent in our emissions, in our environmental footprints, and I think that is what the E\&P companies' future should look like. So, I see Energean playing a crucial role in the transition strategy through gas.

Unfortunately, especially the younger generation who is more active and vocal, believes that the solution to the planet's problem is driving electric vehicles. Yes, the situation will become better in the big cities if we drive electric vehicles, but somebody has produced the battery, somebody has been digging around in another country for raw material for this battery, somebody has moved this with ships around the world that burned fossil fuels, somebody has created paints and other plastics for the cars, and somebody needs to recycle all of this after the end of its life. So, let's look at the total carbon footprint of every solution and make sure that when we make decisions, they are a solution to the planet's problem.

Let's be realistic and understand that gas is the transition fuel to the future and make sure that compressed natural gas (CNG) cars, electric cars, or any other solution that is promoted is in line with what the world and the countries need. Oil and gas companies will play a role in the solution but we need to work closely with governments.

## ENERGEAN FOCUSES ON DEVELOPING RESOURCES IN THE EAST MEDITERRANEAN. HOW WILL ENERGEAN BENEFIT FROM EMGF ESPECIALLY AFTER THE SIGNING OF THE CHARTER?

EMGF is a very important organization, but I have to say it has to be very careful not to become a huge bureaucracy with countless hours being wasted in long conference calls with people that have nothing to do with gas. I am sending a very clear message here: the organizers and the committees have to understand that this is a real vehicle that will promote solutions for the gas business in the East Mediterranean. These solutions begin with interconnectivity, if you do not become interconnected and we just keep talking in endless conference talks and big events, there will be no progress.

What the East Mediterranean needs is very simple; connections between the countries that participate, so that gas becomes a product that can move freely around the market. What the global oil industry needs to do is to make a commodity that has a global price that can't be stuck on a ship and be moved anywhere in the world. Gas, in the East Mediterranean, for the time being, is very domestic. So in Israel today, if we produce gas, we can only sell to the Israeli market. In Cyprus, there are discoveries that have not been developed for over a decade because they are not connected to anyone. Egypt must get connected to more countries apart from the LNG terminals.

The East-Med pipeline that is being discussed is an important one, so the number one priority, in my opinion, for the EMGF is how to make the gas business in the East Mediterranean interconnected. To bring gas from Egypt, Israel, Cyprus, and other countries to the big market of Europe.

## HOW DID ENERGEAN ADJUST ITS WORKFLOW DURING THE PANDEMIC? AND HOW DID THE COMPANY SUPPORT ITS EMPLOYEES DURING THESE EXTRAORDINARY CIRCUMSTANCES?

Our team did an amazing job to continue operations in all countries without losing a single day of operations because of COVID-19 related problems. From an operational perspective production in Abu Qir, Greece, Italy, Karish, and the UK did not stop for a single day. We faced huge problems moving people around into the projects we are working on because of travel restrictions, but we managed to overcome those with the support and cooperation of local governments and technology. We are building a big new Floating Production, Storage and Offloading (FSPO) that costs $\$ 1.3$ billion in Singapore in the Admiralty Yard, which was closed for three months because of COVID-19 restrictions. So, we did suffer a delay in our project that is totally outside our control.

On the human resource side, it has been extremely difficult to keep together an organization that had to adapt from the normal operation of going to the office every day to moving to smart working and working from home. Having people working from different locations is sometimes very challenging because they have children or families around them; that is not easy to make them focus on business. But we managed to stay very close to our employees and to organize social events through Zoom that has allowed us to do wonderful things. I have been exercising online with a lot of my colleagues and even cooking.

It is very difficult especially for the young generation, the 20-30 year- old, that want to start their careers, that want to be mentored and get the experience from working closely with more experienced people in the organization and had to live behind a screen. It is very difficult to live in a small place, alone, with no access to your colleagues, with no access to mentoring and guidance from senior people and that is what I am most concerned about. I really hope that with the vaccine that is starting to get rolled out into various countries-and that will be behind us very soon.

I want 2020 to be forgotten because of I the challenges, but I think it built a lot of different organizational issues for us; it gave us the opportunity to think of how we live and how we work. Is it necessary to travel as much? Is it necessary to spend much time at airports and unnecessary travel? No, it is not. Can you replace human contact with Zoom? Absolutely not. The right answer, I think, is somewhere in between

## 66

> I THINK WE HAVE LEARNED TO BECOME BETTER IN THE WAY WE MANAGE OUR LIVES AND I THINK THAT IS A KEY TAKEAWAY IN 2020.

## 66

> WE ARE INVESTING TODAY MORE THAN \$2 BILLION IN THE E\&P SECTOR BECAUSE IF WE DID NOT BELIEVE THERE IS A FUTURE, WE WOULD NOT BE PUTTING MONEY IN PROJECTS LIKE NORTH EAST AL-AMRIYA, NORTH IDKU

$d$

We need to become more efficient in the way we manage our time, we definitely need to travel less, but there is no way we can replace human contact and human relationships with Zoom or other platforms. So, I think we have learned to become better in the way we manage our lives and I think that is a key takeaway in 2020. Obviously, a key priority for us was to make sure all our work environment was safe, we installed special equipment to clean the air, we implemented all the necessary measures to make sure we have a safe working environment. But the risk is not the office place, the risk is getting to the office place.

The takeaway for me from COVID-19 is that organizations like Energean and governments have become more aware, that will also help the environmental footprint of all of us. One of the bad things of COVID-19 is that what had started as the elimination of single-use of plastic has gone through the door. The amount of plastic I see today being used; plastic bags, masks, is unbelievable. We need to fix that. We need to become better citizens and better employers going forward.

## WHAT DOES THE ENERGY OUTLOOK FOR THE EAST MEDITERRANEAN LOOK LIKE AND FOR ENERGEAN IN PARTICULAR IN 2021?

Although I come from Greece, and Greece used to have oracles that could predict the future, I try to stay away from predicting the future! What I can tell you very clearly is that Energean in 2021 is going to be totally committed to the integration of the Edison E\&P business. It will be committed to making investments in the areas discussed. It is going to be committed to delivering first gas from Israel and becoming a company that will produce in the next few years 200,000 bbloe/d mostly in gas. We will continuously reduce our environmental footprint and be a leader in the sustainability side of our business.

We have seen a big reduction in the oil and gas investments, but we have not seen an equal reduction in the demand for these products. So as the economy goes back out of the 2020 misery and people start to move and travel again, my concern and hope is that we will see an imbalance of the supply and demand side. The world does not understand that investing in oil and gas is not something you can switch on and suddenly you produce more gas. An investment in a field like Karish takes three years, maybe four, and needs almost $\$ 2$ billion in investments to start producing gas. So, we need to explore, appraise, develop and all that takes time. The big gap that I am seeing is that major companies are cutting down investments in the E\&P sector and we will see the impact of that undoubtedly in a couple of years' time.

I also see that, with a lot of major companies moving out of the E\&P sector and focusing on renewables, there will be a lot of opportunities like the one we took advantage of from EDF, so I think we will see more of that. We will see major companies leaving assets or even countries that are not considered core and for the E\&P players like us that will create huge opportunities and that is what we will be focused on.

## SO, COULD WE SEE \$70-80 A BARREL COMING BACK AGAIN SOMETIME IN THE NEXT THREE OR FIVE YEARS?

I do not predict oil prices, I will never do that because if I can predict oil prices, I will be doing a different job and I would be in a different position. What I am saying is that | see this lack of investment will undoubtedly lead to a supply gap. Whether that will be reflected in oil or gas price imbalance, I think that will depend a lot on demand and other factors. My view is that if you have an opinion and you believe in something, you invest money in it. We are investing today more than $\$ 2$ billion in the E\&P sector because if we did not believe there is a future, we would not be putting money in projects like North East Al-Amriya, North Idku, Karish, and Cassiopea, and Epsilon and the other big investments we will make in the next few years. In a very pessimistic environment, I am being very optimistic because I do believe that there is a great future for a sustainable E\&P company and that is what Energean is all about.

UNDER THE HIGH PATRONAGE OF HE. ENG. TAREK EL MOLLA MINISTER OF PETROLEUM \& MINERAL RESOURCES - ARAB REPUBLIC OF EGYPT

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# INVESTIGATING EGYPT'S NATURAL GAS EXPLORATION \& DRILING ACTVVITIES STATUS IN FYS (2018/19-2019/20) 


BY AMINA HUSSEIN, REHAM GAMAL, AND TASNEEM MADI


#### Abstract

T- hrough the path to become a regional natural gas hub, Egypt was able to balance its performance in natural gas Exploration and Production (E\&P) activities within one of the most tragic periods facing the global petroleum market. While the international oil and gas markets suffered from the COVID-19 negative effects, the Egyptian Natural Gas Holding Company (EGAS), in the latest annual report of fiscal year (FY) 2019/20, remarked an annual increase of $53.3 \%$ in the number of natural gas


 discoveries in Egypt. This is in addition to keeping a significant production rate of approximately 6.6 billion cubic feet per day (bcf/d).This report highlights the development of the natural gas upstream activities between FYs 2018/19-2019/20, in addition to the main achievements of EGAS in the latest FY 2019/20.

## 1. EXPLORATION ACTIVITIES

I. SEISMIC SURVEYS

A key part of natural gas exploration is seismic surveying, which aims to create detailed images of basic geological formations. Hence, before drilling, seismic investigation must first be completed to define the potential drill location.

In FY 2018/19, 2D seismic survey program (SPEC Project) was acquired in the Mediterranean Sea with an area of about 21,328 km, completing the second phase of the project with a total area of about $21,904 \mathrm{~km}$. Also, a 2 D seismic acquisition of 116.6 km in the Mediterranean Sea and the Nile Delta have been completed. This is in addition to conducting a 3D seismic survey in the Nile Delta with a total area of 372 $\mathrm{km}^{2}$. In FY 2019/20, the 2D seismic survey program (SPEC Project) in Mediterranean was ongoing, while a 3D seismic survey in the Mediterranean was carried out with a total area of 321 km², explained in EGAS's Annual Reports 2018/19 and 2019/20.

## II. MAIN AREAS OF EXPLORATION ACTIVITIES

The Egyptian petroleum sector's stakeholders succeeded in increasing the number of natural gas discoveries, in spite of the unstable international conditions. As in FY 2019/20, EGAS reported achieving a total of 23 natural gas discoveries by the companies operating in Egypt, compared to only 15 natural gas discoveries announced in FY 2018/19, according to EGAS's Annual Reports 2018/19 and 2019/20.

The natural gas discoveries were achieved in three main areas; namely the Western Desert, the Mediterranean Sea, and the Nile Delta. In FY 2018/19, the Western Desert had the lion's share in the total discoveries with $66.7 \%$, while the Mediterranean Sea had a share of one third, and none of the discoveries were achieved in the Nile Delta, according to EGAS's Annual Report 2018/19.

In FY 2019/20, the Western Desert also had the largest share in the discovered wells with $69.6 \%$, followed by $21.7 \%$ for the Mediterranean region, and $8.7 \%$ for the Nile Delta, according to EGAS's Annual Report 2019/20.


In FY 2018/19, the 15 discoveries were made by seven oil companies. Khalda Petroleum Co. (Khalda) came on the top of these companies with a share of $46.7 \%$ of the total discovered wells, that were all located in the Western Desert. North Sinai Petroleum Company (Nospco) came second with a share of $20 \%$, while Badr El Din Petroleum Company (BAPETCO), Agiba Petroleum Co. (Agiba), the International Egyptian Oil Company (IEOC), Rashpetco, and HBS International had a share of 6.6\% each, according to EGAS's Annual Report 2018/19.

On the other hand, FY 2019/20 witnessed the success of 10 companies in achieving natural gas discoveries in the different areas. Similarly, Khalda had the largest share of $39.1 \%$, followed by BAPETCO, Shell, the General Petroleum Company (GPC), SDX, and Nospco with a share of $8.7 \%$ each. Furthermore, Agiba, Energean (through Edison), BP, and IEOC had a share of 4.4\% each, according to EGAS's Annual Report 2019/20.


## NATURAL GAS DISCOVERIES PER COMPANY IN FY 2019/20



## III. MAIN DISCOVERIES AND ADDED RESERVES

The more natural gas fields discovered with substantial potential, the more Egypt's natural gas reserves added. Yet, the continuous growth of reserves is mainly achieved through intensive exploration campaigns and extensive use of technologies. Over FYs 2018/19 to 2019/20, the added reserves averaged at about 1,459 billion cubic feet (bcf) in the Mediterranean and the Nile Delta, according to EGAS's Annual Reports 2018/19 and 2019/20.



In FY 2018/19, the added reserves of natural gas outstandingly jumped by over $300 \%$. Eight exploratory and appraisal wells were drilled, resulting in three successful wells in Mediterranean Sea and Nile Delta with a Success Ratio of 100\%. The drilled well also put on five discoveries that added reserves of 598 bcf of natural gas. Two major discoveries contributed alone more than $70 \%$ of the total discoveries, amounting to 517 bcf, according to EGAS's Annual Report 2018/19.

## MAIN DISCOVERIES IN THE <br> MEDITERRANEAN SEA IN FY 2018/19

Well
Natural Gas Reserves (bcf)

Swan East- 1
117

Nour-1 ST
400

In FY 2019/20, the increase in the number of discoveries drove the added reserves of natural gas to rise by more than $150 \%$. It is worth mentioning that 12 exploratory wells were drilled resulting in four dry and one suspended wells in Mediterranean Sea and Nile Delta with a Success Ratio of 64\%. Meanwhile, those drilled wells brought seven discoveries with added reserves of 900 bcf of natural gas; of which, three major discoveries added natural gas reserves of 656 bcf, representing 31\% of the total added reserves, according to EGAS's Annual Report 2019/20.

MAIN DISCOVERIES IN FY 2019/20


## 2. DRILLING AND PRODUCTION ACTIVITIES I. DRILLED WELLS

The total number of drilled wells decreased by $17 \%$ in FY 2019/20, reaching 29 wells, compared to FY 2018/19. Such decline was particularly due to the circumstances of COVID-19 prevalence and its impact on different sectors.
Exploration wells are drilled for exploration purposes in new areas. While development or production wells are for production in fields with proven reserves. Thus, in FY 2019/20, development wells witnessed a decreasing rate of $78 \%$. While exploration wells recorded an increase of about 188\%, according to EGAS's Annual Reports 2018/19 and 2019/20.

Development wells' share reached 21\% of total number of drilled wells in FY 2019/20 instead of $77 \%$ in FY 2018/19. On the other hand, the exploration wells' share massively increased to 79\% in FY 2019/20 instead of 23\% in FY 2018/19, according to EGAS's Annual Reports 2018/19 and 2019/20.

In total, there are three exploration wells in the drilling phase in FY 2019/20, according to EGAS's Annual Reports 2018/19 and 2019/20.


## II. NATURAL GAS AND CONDENSATES PRODUCTION

In association with exploration and drilling activities, 39 wells were put on stream in FY 2019/20, declining by 30.4 \% compared to 56 wells in FY 2018/19. Development wells put on stream declined by $77 \%$ in FY 2019/20 compared to the previous year, while wells from development projects, whether exploration or development wells, put on stream increased by 48\% in FY 2019/20.

TOTAL WELLS PUT ON STREAM


## WELLS PUT ON STREAM PER TYPE <br> Wells from Development Projects Development Wells



As a result of the wells put on stream, total natural gas production in the two FYs reaches 4,920 bcf; total condensates production reaches 62.88 million barrels (mmbbl). Natural gas and condensates production decreased separately by about $5 \%$ in FY 2019/20 compared to FY 2018/19. It is worth noting that natural gas and condensates production was similarly impacted due to the pandemic circumstances, according to EGAS's Annual Reports 2018/19 and 2019/20.

As an annual average in the two years, natural gas production reached 2,460 bcf, while condensates average production recorded 31.44 mmbbl, according to EGAS's Annual Reports 2018/19 and 2019/20.

## 1 2 NATURAL GAS \& CONDENSATES PRODUCTION IN FY 2019/20



Facing the first wave of the pandemic in H2 FY 2019/20, the Egyptian market showed a solid and well-balanced performance. This was mainly due to the extensive efforts of the Ministry of Petroleum and Mineral Resources (MoP) and EGAS to keep the market safe, and appealing for the international investors. These efforts were based on two pillars including enhancing exploration activities which resulted in increasing the number of discoveries through implementing both 2D and 3D seismic surveys in the Mediterranean Sea and the Nile Delta. This is in addition to performing several development projects to keep stable levels of production; 11 natural gas development projects were implemented with total investments of $\$ 1.116$ billion, according to EGAS's Annual Report 2019/20.


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# THE ODYSSEY OF CRUDE OIL PRICES AND PRODUCTION 

## BY RANA AL KADY

To begin with, the coronavirus has affected the global energy markets as well as the primary energy consumption in multiple ways. While this global pandemic was only seen as a minor threat to the city of Wuhan in China, its turbulent and intense effect on the energy market hasn't been seen since the Swine Flu that spread between 2009 and 2010, with a similar global impact. The unpredictability of the coronavirus's spread has caused a major fluctuation in the oil and gas industry, especially when concerned with supply and demand.

## GENERAL OVERVIEW

The coronavirus has affected multiple markets and led to a series of events. For instance, as of this month, Lufthansa Airlines has cut its flights by $50 \%$ due to multiple cancellations (because of the uncontrollable spread of the virus), academic institutes have turned to online lectures due to low student turnout and, of course, China's economic growth rate has decreased to nearly $5 \%$ (i.e. the slowest economic expansion rate seen over the last three decades). If all of these industries are affected by the coronavirus, one can only imagine the effect that this global pandemic has on the world's most essential and influential markets: the energy market.

The energy market has been hit by the virus in ways that neither investors nor sellers had expected. For instance, it was announced recently that the Organization of the Petroleum Exporting Countries (OPEC) had failed to agree on supply cuts in production. This is an important decision for OPEC countries as the reduction in supply directly affects the stability of the price of oil per barrel as primary energy consumption and demand decreases dramatically.

## CRUDE OIL FLUCTUATIONS

In fact, oil prices have fallen by over 9\%, making it the lowest rate since 2016. In an attempt to resolve the issue in the surplus of oil supply, OPEC reached out to Russia to suggest a two-part alternative to this dilemma: (i) to aid in the extension of the current "production cuts of 2.1 Million Barrels (MMbbl) through to the end of 2020" and (ii) to implement a slash in nearly $1.5 \mathrm{MMbbl} / \mathrm{d}$. Seeking a solution on the matter, OPEC still remains in talks to propose other backup solutions.

During Q1 2020, US oil prices have declined drastically since the outbreak of the CoronaVirus.As amatter offact, between January 2nd, 2020 and March 6th, 2020, oil prices have decreased from $\$ 64$ to $\$ 41$, respectively. A near 33\% reduction in oil prices demonstrated the lack of demand for oil during a time in which people are limiting the time spent outside their homes. The decline is found to be the lowest since the financial crisis that occurred in 2008. Additionally, as stated by an Oil and Gas Research Analyst who preferred anonymity, said that "this is not the first time the supply and demand of oil has changed in Egypt." The Oil and GasResearchAnalyst added that, "with or without COVID-19, companies should always be prepared and forecast the future of the industry. I think the lesson learned
this time is that oil prices are not always stable and so we should take care of this moving forward when we forecast supply and demand."

Consequently, predicted growth for 2020 is expected to be near zero unless a sort of curtailment occurs by Q2 that causes a minor increase in demand by the end of the year. However, the advantage during this difficult economic situation is that lower demand in primary energy has not only resulted in a decrease in the consumption of fuel but has also decreased carbon emissions. In fact, according to an article published by the Washington Post, China - which is currently the country with the highest GHG emissions - has found a reduction in its local emissions by over $25 \%$ as a result of the decrease in demand in the energy markets.

## CASE STUDY

Recent studies have shown that capital expenditures (CAPEX) of major oil and gas companies have fluctuated drastically throughout the course of the year. For instance, Saudi Aramco has revised its CAPEX values by nearly USD 10 billion (i.e. from USD 35 billion to USD 25 billion). Following in Saudi Aramco's footsteps, Chevron - an American oil and gas company - has also decreased its CAPEX costs by USD 5 billion (i.e. from USD 25 billion to USD 20 billion). Other oil and gas companies have also revised their respective CAPEX costs, but on smaller scales; British Petroleum (BP) as well as Equinor, revised CAPEX costs by nearly USD 2 to 3 billion. The industries deeply impacted by the fluctuating crude oil supply and demand include the transportation sector (i.e. through jet fuel for airplanes and gasoline for automobiles). In fact, itwas predicted by the International Energy Agency (IEA) that the type of oil and gas product that would face the most challenges is the shale gas industry, with crude oil suffering expected reasonable fluctuations.

However, the oil and gas industry is not new to the impacts of outbreaks or global emergencies. As a matter of fact, when the Spanish Flu spread during the early 20th Century, petroleum byproducts were not impacted for two main reasons; these reasons include that the petroleum hydrocarbons were yet to be in high demand in addition to the fact that such products were not yet common or widespread. Later on, during the course of the Severe Acute Respiratory Syndrome (SARS), which began at the turn of the 21st century, GCC and Asian regions were impacted severely. However, the closest example similar to that of the coronavirus pandemic is that of the Swine Flu (H1NI). This pandemic was one with a large reach as it impacted multiple countries worldwide

In conclusion, it can be noted that the overall growth and demand in the crude oil market has decreased largely over the course between Q1 and Q4 in 2020. However, the positive outlook on this subject is that the environmental impact in terms of Greenhouse Gasses (GHG) and carbon emissions have greatly reduced, giving a silver lining to the global crisis. Additionally, with the second wave on the brink of completion and vaccines expected to become readily available in the market over the coming year or so, the supply and demand of crude oil would be expected to take off steadily.

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# THE COIDEN YEAR <br> OF EGYPT'S MINING SECTOR 

## BY MAI EL GHANDOUR

O
ne year ago, the mining sector vouched for a fundamental change from within its core practices. That change came in the form of new legislative reforms and new opportunities that were sound enough to power through a pandemic. Throughout 2020, the sector retained its bold moves only to prove that Egypt's mining potential is above any crisis. This one-year journey was full of exciting news that spearheaded the development of the sector.

## NEW LEGISLATIVE REFORMS

The year 2020 began with the Prime Minister's Decree No. 108 of 2020 promulgating executive regulations of the mineral resources law, promulgating Law No. 198 of 2014.
The Head of Central Administrationfor Mining and Quarries at the Egyptian Mineral Resources Authority (EMRA), Geologist Ayman llbrahim, told Egypt Oil \& Gas (EOG) "Although 2020 was a rough year for the rest of the world, it was a good one for the mining sector in Egypt as the year was rolled out with the issuance of the new executive regulations of the Mineral Resources Law."

The new provisions were to be applied for exploration and exploitation licenses of ore mines, quarries, and saltworks, issued by EMRA, where the proceeds of companies' rents and royalty fees would be transferred to the State treasury.
Commenting on the new regulations, Dr. Heba Anwar Raslan, Managing Associate at Sharkawy \& Sarhan Law Firm, told Egypt Oil \& Gas, "Egypt has an ambitious plan to turn the mining sector into a significant source of gross domestic product (GDP), eyeing $\$ 7$ billion by 2030. The legislative amendments as well as the brand-new executive regulation that Egypt introduced to the mining regulatory regime back in 2019 and early 2020, were certainly a positive step."

Raslan indicated that this "showed political will to revamp the sector and an openness to deal with issues raised by market players and investors. It is vital that this is complemented with further efforts on the ground to bring awarded licenses to fruition, and send a positive signal to potentially interested mining investors."
The new law was said to rectify the errors of the previous laws, thus increasing foreign investments and exploiting Egypt's rich mineral wealth. The amended provisions include terms and conditions that are sector and investment-friendly, tackling several economic and regulatory issues raised previously by investors in the sector.

## GOLDEN OPPORTUNITIES

From here, the Ministry of Petroleum and Mineral Resources announced during a press conference, held on February 25, the launch of its first international bid round for gold mining in 2020. The International Bid-round No (1)/2020 for exploration of gold and associated minerals round covered a total area of around 56,000 kilometers square (km2) in the Eastern Desert and the Red Sea.

According to a press release at that time, the Minister of Petroleum and Mineral Resources, Tarek EI Molla, stated that the bid was held by the royalty and taxes system, adding that the new modifications in the Mineral Resources Law in addition to the Investment Law are making bid rounds more attractive to investors. Moreover, the ministry will launch new gold exploration tenders every four months, the minister said in the press conference.

Raslan remarked that "The Ministry of Petroleum and Mineral Resources along with EMRA ought to be applauded for managing the bid round (1) 2020 for gold in the Eastern Desert, in such an extraordinary year. The process of finalizing and issuing the exploration licenses is as important, following which exploration licenses based on the new royalty, rent, tax licensing regime will be launched for the first time."

In addition, EMRA's Ibrahim noted to EOG that "the number of international companies submitting for bids and purchasing their informational packages exceeded any expectations."
However, due to COVID-19, the results were postponed four months and were rather announced on November 19. El Molla announced the results of Egypt's gold bid round, where 11 national and international mining companies won the rights for exploring 82 concession areas for gold in Egypt.

The winning companies included; Centamin, Barrick Gold, Lotus Gold Corporation, B2Gold, Red Sea Resources, AKH Gold, and SRK Consulting. The Egyptian companies include; MEDAF, Al-Abadi, North Africa Mining and Petroleum Company (NAMC), and Ebdaa for Gold Mining. The companies will cover 82 concession areas on an area of $14,000 \mathrm{~km} 2$ in the Eastern Desert with an initial investment of $\$ 60$ million minimum.

The minister added that the exploration and exploitation operations will be carried out in line with the recent legislative amendments.
Speaking in more details on the legislative amendments, Dr. Raslan said, "we note that both the Mining Exploration License and the Exploitation License Models are largely based on internationally recognized mining licensing models, so they should make for a very good start. The Models also include a free carry participating interest. This was a commercial point in the bid round, with the required free carry percentage ranging between 15 to $50 \%$ of net profit."

Raslan added that "EMRA has also made the Exploitation License Model available during the bidding process, albeit this will be issued, at a later stage, as and when commercial discoveries are made in the newly awarded areas. However, it was important to make the Exploitation License model available at the bidding stage so that the bidding investors are able to have a comprehensive and informed view of the legal, financial and technical obligations of the entire project, so as to inform investors' decisions on participating in the bid round."

## WINNERS AND INVESTORS

Commenting on the bid round win, Mining Engineer at Centamin, Mohammad Salah, told EOG "it [Centamin] won in the last bidding and is increasing its investments in Egypt leading significantly to increase and raise the efficiency of the mining sector and encourage investment in Egypt. It will also contribute effectively to increasing the gold reserves of Egypt and contribute in the future to Egypt becoming an internationally accredited center for extracting gold bars with purity of $99.99 \%$."

From their side, Barrick Gold refused to comment on market speculations, but rather stated that "we are always reviewing opportunities that might deliver Tier 1 gold discoveries."
B2Gold, on the other hand, told EOG when asked what propelled the company to participate in Egypt's gold bid round that it is the "potentially positive adjustments to mining legislation and simplification of the fiscal regime governing the exploration and exploitation of mineral deposits," in addition to "the relative under-investment in modern exploration in the historically prospective Arabian-Nubian Shield."

The same company also shared their target from exploring and exploiting Egypt's Eastern Desert concessions, which are: "discovering a world-class gold deposit with our highly experienced exploration team. Continuing on to construct, develop and operate a new mine with our proven in-house expertise and financial capacity. Contribute positively to the Egyptian economy, local communities, workforce and environment - as we currently do at all of our global operations."

## ROLLING OUT BID \#2

"After its huge success, the second bid round was immediately disclosed with the first bid winners' announcement," EMRA's lbrahim told EOG. In the same sequence, the minister announced the launch of a second mining round that includes 208 concessions on an area of 38,000 kilometers in the Eastern Desert, indicating that the bid will continue throughout the year.

El Molla also announced the International Bid-round No (2)/2020 for exploration of some ores and associated minerals starting November 19, until mid-March 2021, covering areas of about 16 km 2 . The ores mentioned include; iron, phosphates, copper, white sand, feldspar, potassium salts, lead, zinc, kaolin, and for the very first time, Lake Nasser deposits.

The minister emphasized that the reformation of the mining sector, training cadres, and promoting mining investment opportunities are essential. He further indicated that Egypt's economic reform, political and security stability, in addition to the mining legislative framework create an attractive climate for investors.
"This is a great success in the mining sector, as the winning companies are pumping millions of dollars into the veins of the Egyptian economy, forcing many Egyptian workers in all different disciplines to gain experience and add new skills that are needed by the Egyptian labor market," Ibrahim further denoted.

Mark Campbell, CEO of Aton Resources, told EOG that "it is very exciting to have world-class companies such as Barrick, Centamin, La Mancha and B2Gold bidding, it is a huge win for EMRA, the MoP and the country. Their presence in Egypt will give a real boost to the mineral exploration and mining sector and will, I believe, lead to more companies coming in future bid rounds. It is also a credit to the vision of His Excellency EI Molla, to have taken the bold step to reform the mining law."

## OTHER KEY INVESTORS

Not all companies had been part of the first bid, however. When asked why world-class Aton Resources did not participate, the CEO of the company told EOG, "We did not bid this time, though we would have liked to and had identified areas that we would have bid on, but our decision not to bid was operational and not linked to the bid round itsef."

Like many, COVID 19 impacted Aton's operations, especially in Q1 2020. "As the only foreign exploration company working in Egypt up until now, we have current exploration and development projects that we need to get on with. So, we are currently working on restarting our exploration drilling program before the year end, as well as moving to develop a gold mine at Hamama," Campbell stated.

Nonetheless, Aton Resources might be a participant in future bid rounds, especially that its operations began to pick up quickly by Q3 and Q4 2020. "There is a copper, zinc and lead bid round coming up that could be interesting, as well as the next gold bid round, so it is an exciting time to be in the exploration business in Egypt," Campbell told EOG back in September 2020.

As of October 25, Aton Resources announced plans to drill Abu Gaharish concession by January 2021. Per the company's statement, the Abu Gaharish is believed to be of similar quality of the world-class Sukari deposit. The company has also announced several operational updates on the Rodruin area and Hamama West area.

According to a statement, Aton's new investor,Mining and Manufacturing Company (MEDAF), has made an investment of $\$ 7$ million. Through the new funding, Aton will be able to expand its exploration activities at the Abu Marawat Concession as well as funding Aton's working capital requirements.

Campbell noted that "the future looks very bright for Aton Resources and Egypt. Aton never doubted that Egypt would one day be recognized as a world-class exploration destination, which is why we have stuck to working here for the past 11 years."

## EXPLOITING NEW DISCOVERIES

On June 30, the Minister of Petroleum and Mineral Resources announced a commercial gold discovery in the Eastern Desert, with estimated reserves exceeding 1 million ounces of gold and an extraction rate of 95\%. The discovery was achieved in the concession area of Shalateen Mining Company and the total investments of the discovery over the next ten years are estimated to reach more than $\$ 1$ billion.

This achievement was a cooperation between EMRA, National Service Product Organization, National Investment Bank and the Egyptian Mineral Resources Company. Furthermore, a joint company will be established between Shalateen and EMRA to operate in the discovery site which will be the third company exploring gold and associated minerals in Egypt.

Later, on August 19, Al-Ahram newspaper reported that the House of Representatives approved a bill that allows the Ministry of Petroleum and Mineral Resources (MoP) to exploit quarries and salines that fall within the jurisdiction of the New Urban Communities Authority and in all governorates.

The bill was aimed at granting the Egyptian Company for Mining, Management and Exploitation of Quarries and Salines an obligation to manage and exploit ores, according to the appendix (A), and for any future projects that maximize its added value.

Additionally, the company would be able to utilize the manufacturing of ores in its various stages and to meet the market needs on a national and international level to support the national economy. Mohamed Abou El Enein, a member of the House, commented saying that the bill is an added value for preserving the national wealth and managing the quarying and salines in Egypt.

## MINING SECTOR DEVELOPMENT

After the prominent discovery, Egyptian President Abd El Fattah Al-Sisi met with Prime Minister Mostafa Madbouly and El Molla to discuss plans and efforts of the petroleum ministry in developing different sectors especially the mineral resources.
During the meeting, Al-Sisi gave directives to form a comprehensive strategic vision in the aim of updating the mineral sector in Egypt to exploit the nation's significant mineral deposits. Additionally, EI Molla presented the latest gold discovery in the Eastern Desert which, according to him, will open new horizons in mineral resources discoveries in Egypt.

The Ministry of Petroleum and Mineral Resources, in cooperation with EMRA, launched afterward in mid-July a second-phase program to train the mining sector's workers. According to a press release published at that time, El Molla stressed that investment in human resources comes as a cornerstone of the ministry's strategy to develop the mining sector and increase its contribution to the national economy.

El Molla added that the program of developing the mining sector was an asset to reforming the legislative and investment aspects of the sector, adding that its results will polarize during the coming period, especially after amending the mining law and issuing its new executive regulations. He also confirmed that the next period will witness more flexibility and professionalism in dealing with the mining investments through training programs as such, mentioning that in the first phase the ministry has trained a group of 60 miners which was followed by two other groups.

Later in August, the president once again called for modernizing the mining sector, while the Minister of Planning and Economic Development (MPED), Hala El-Said, reviewed Egypt's Vision 2030 for the mining sector's development plan. She discussed the conversion of mineral ores and utilizing them in manufacturing industries. El-Said denoted that the plan also includes maximizing spending on exploration while reducing mineral ores imports, taking into account the environmental aspect of exploration, extraction, and manufacturing

The Minister of Local Development, Mahmoud Youssry Shaaramy, simultaneously reviewed the currentsituation of quarries and salinas, and his ministry's plans for development regarding exploitation licenses and operation obligations.

## FUTURE INVESTMENTS

Speaking on the future prospects, Raslan stated that "a few issues may still need further attention, perhaps during discussions to finalize the terms of the exploration license with EMRA, such as stability issues in relation to for example taxes and rental fees. It would be also helpful to clarify the process of transitioning to the exploitation license upon commercial discovery, especially since for gold, exploitation licenses will be enacted in the form of a special law."

She also said: "the interplay between the licenses, the law and its executive regulation may need to be developed, for a few issues such as the royalty percentage and the term of the exploitation license. The amendments also allow mining companies to establish under the investment area regime regulated by the Investment Law. This is an important point for investors looking for competitive tax and customs terms, and the relevant authorities are encouraged to offer more clarity on the process of setting up mining companies under this regime."

Mining Engineer, Salah, on the other hand, concluded to EOG that "Undoubtedly, increasing investments in the mining sector is one of the things that a lot has sought in previous periods and the effective role of the Minister of Petroleum in addition to that of the EMRA have contributed to the important role that the mining sector occupies and will contribute significantly to raising the economic and financial level."

On a final note, the mining engineer further stated that "attracting investors to the mining sector will contribute significantly to creating employment opportunities and opening the horizon for competition between international companies, so that Egypt will become a new arena for foreign mining investments. Egypt also has large and great mining cadres that can be used in the coming days with the spread of the field and mining opportunities."
hat a year it has been for the global oil and gas industry and all its divisions! Unexpected as it was, it was not all downs, at least for Egypt. Despite the shock of the COVID-19 pandemic, Egypt's petroleum sector has had a strong year on so many levels and its refining division is no exception.

REFINING SECTOR \& OIL PRICES

The oil price crisis of 2020 will not be forgotten any time soon, it slithered its way through every crook and nook of the energy industry. The refining sector, however, pulled through. Refining companies have benefited greatly from the price slump, as they had the opportunity to buy crude at a much lower price than normal, sell it at a normalized price range while making a profit as well. In pre-pandemic times, the high crude prices do not necessarily impact refineries negatively, but they do not guarantee a large profit margin.
However, the current oil prices pose a challenge to the industry as a whole, Nagy Iskander, an Oil and Gas Consultant, explained that "if we believe the current prices will be temporary low and it will pick up in the near future to go back to the $\$ 70-80 / \mathrm{bbl}$, then it is wise to invest to upgrade or add additional refining capacity now." Despite that, Iskander noted that the increase in demand for renewable energy and electric cars in the near future should not be overlooked. In case it replaces or discouraged the need for fossil fuel "then oil prices will stay low or even drop further and it might be better off to invest in renewables than refining," Iskander elaborated.

## MAJOR REFINING ACHIEVEMENTS

Although 2020 was not a smooth ride for any industry for sure, Egypt remained persistent through it all and its refining sector had major triumphs that year. The Ministry of Petroleum and Mineral Resources (MoP) set an ambitious plan for 2020 regarding the refining sector with a strategy to increase refining capacity to reach more than 41 million tons (mmt) of petroleum products and pave the way to self-sufficiency. Tarek El Molla, Minister of Petroleum and Mineral Resources, has previously stated that the ministry has an avid investment plan of EGP 48 billion poured into the refining sector. While COVID-19 has skewed the ministry's plans for downstream expansion with project delays, it was not permanently halted, and by the end of the year, most projects became active once again.
One of the most notable downstream projects of 2020 was the inauguration of the Mostorod Petrochemical Refinery at the Egyptian Refinery Company (ERC) with valued investments of $\$ 4.3$ billion. The project was celebrated as one of the most important petroleum refineries in Egypt and Africa with a production capacity of 4.7 mmt of petroleum products per year. Mostrod's expansion is essential in several manners, one of them is that it aims to decrease Egypt's annual imports bill by $\$ 0.6$ - $\$ 1$ billion. It could also contribute to decreasing Egypt's imports of gasoline and diesel by $35 \%$ paralleling that with an increase in diesel production by $30 \%$ and an increase in octane production by $15 \%$.

Medhat Youssef, former Vice President of the Egyptian General Petroleum Corporation (EGPC), has previously stated that the Mostrod's refinery will be a stepping stone towards exporting petroleum products. Youssef predicted that by 2023, Egypt will have enough gasoline and naphtha to export, and as it will secure these petroleum products on a national level. Mostrod's project is not only a sustainable economic move, it is also an environmental one. Yasmine Fouad, Minister of Environment, praised the project as integration between energy, environment, and industry sectors, which is set to be one of the main elements for economic growth and a path to international markets.
Perhaps one of the biggest refining projects in Egypt is the expansion of Middle East Oil Refinery (MDOR) which began in 2017 and rounded up investments of $\$ 2.2$ billion by the end of 2019. The project is only $33.78 \%$ complete, however, due to the pandemic, the project faced several delays and was ultimately shut down as a result. The ministry stated previously though that MIDOR's expansion will be completed in 2022. Several refining projects are being implemented and expected to be done in the upcoming years that includes; the Asphalt

Production Unit at Suez Oil Processing Company (SOPC) and the Hydrocracking Complex and Production of Gasoline at the Red Sea Company in 2021 and 2022, respectively.
What's more, one of the largest refining projects Egypt signed in 2020 was the $\$ 2.8$ bilion new hydrocracking complex for the Assiut refinery which was signed by Assiut National Oil Processing Company (ANOPC) and TechnipFMC. This project alone will contribute greatly towards Egypt's self-sufficiency plan of petroleum products. As the project has a production capacity of about $2.8 \mathrm{mmt} / \mathrm{y}$ of diesel, 400,000 tons per year ( $\mathrm{t} / \mathrm{y}$ ) of high-octane gasoline produced from naphtha and $100,000 \mathrm{t} / \mathrm{y}$ of butane, in addition to a production capacity of $300,000 \mathrm{t} / \mathrm{y}$ of coal and $66,000 \mathrm{t} / \mathrm{y}$ of sulfur.

## TRADE \& SECURITY

Speaking of petroleum products security, it is essential to first examine Egypt's petroleum intake and outtake. Per the ministry's data, Egypt's consumption of petroleum products reached nearly $30.2 \mathrm{mt} /$ year of oil products in 2019, nearly a third of that was imported at $\$ 6.8$ billion. Iskander remarked that "Egypt's new refining capacities added recently or under construction from Cairo Refinery in Mostorod, Assiut Oil Refinery, Midor, and Alexandria Oil Refineries will accelerate Egypt's self-sufficiency from diesel fuel, high octane fuel as well as jet fuel and butane."

When it comes to trade, according to the Central Agency for Public Mobilization and Statistics (CAPMAS), petroleum products' imports declined by 61\% in June 2020 to $\$ 255$ milion compared to $\$ 654$ million in the same month in 2019, while total crude oil imports amounted to $\$ 2.236$ billion during H1 2020. Meanwhile, petroleum products' exports amounted to $\$ 746.4$ million, whereas crude exports amounted to $\$ 552$ million in H1 2020. Taking into consideration that during the lockdown period that took place earlier in 2020, gasoline and diesel consumption decreased by 11,000 to 13,000 tons, and 21,000 to 25,000 tons, respectively.

## LOOKING AHEAD

Even though the pandemic has made unsettling changes in so many aspects of what we once knew as the 'normal life', Ife moves forward. The refining sector outlook for 2021 does not look so dull, Iskander believes that Egypt will achieve two main success, the first being "the additional refining capacity added that will contribute significantly towards achieving selfsufficiency within the coming few years." The second success takes a more environmental approach which "is getting the sector to be greener and environmentally friendly by expanding in projects like the one financed by the European Bank for Reconstruction and Development (EBRD) to the state-owned Alexandria Petroleum Company (APC)," Iskander added.
Despite the challenges facing the world with no end in sight, the ministry still has a lot to offer for the downstream refining sector by focusing on the $\$ 8.5$ billion refinery in Al-Alamein in the Western Desert, which is set to be completed by 2024. The complex is expected to process $2.5 \mathrm{mt} /$ year of crude and condensate and export petroleum products. Another project underway is the $\$ 6.2$ billion project at the Suez Canal Economic Zone with a capacity to produce up to $900,000 \mathrm{mt} /$ year of refined products. The two projects are targeting to produce diverse petrochemical and petroleum products to meet the local market needs and export the surplus.

With the news of vaccines rolling around the world, it brings new hope of energy recovery to the scene. Deloitte certainly agrees as it expects oil demand to recover in 2021, but not enough to reach pre-COVID-19 levels-about 4\% lower in the base case, and about 7\% lower in Rystad Energy's second-wave scenario.

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# WHAT MAKES 2020 A YEAR LIKE NO OTHER 

## BY IHAB SHAARAWY

ith the emergence of the coronavirus pandemic, 2020 brought challenges that no one was prepared for, changing the way we live, dominating political scenes, and sending shock waves across the world markets.

The respiratory disease known as COVID-19 has driven schools to shut down, employees to work remotely, and people to remain inside their homes. It mitigated some environmental risks but did not prevent armed conficts to break out around the world.

It was a golden year for science and technology to flourish. However, this did not prevent millions of people to go below the poverty line.

The year 2020 was actually one of the most eventful years in recent history and maybe a turning point that is expected to change the dynamics of life in the future.

Hence, the year of face masks and quarantines will have many other reasons to go down the history books rather than coronavirus.

## CONFLICTS, WARS GO ON

There was no wonder that the most volatile political scene in 2020 was in the US, where more than 18 million cases and more than 320,000 deaths from coronavirus were recorded, the highest figures in the world. From Black Lives Matter demonstrations to a fierce presidential campaign that ended with the fall of President Donald Trump and the coming of democrats, coronavirus was one of the political tools that was used by all parties.

The year also witnessed a historic day in US presidential history after Trump became the third president to be impeached and subsequently acquitted by the Senate.

It was also the year when relations between the US and China hit rock bottom. After a breakthrough in the nearly two-year trade war between the world's two largest economies in January with signing a deal that relaxes some US tariffs on Chinese imports and obliges China to buy an additional \$200 billion worth of American goods, tensions soared again amid the coronavirus pandemic. Officials in both China and the US blamed the other side for the pandemic.

While Chinese officials claimed that the US military brought the virus to China, Trump made repeated references to the "Chinese virus," which he says spread because of failures by the Chinese government. The situation escalated when the US ordered China to close its consulate in Houston alleging that it was a hub of espionage and intellectual property theft. China hit back by closing the US consulate in Chengdu.
The coronavirus and the economic situation did not prevent China to engage in another dangerous conflict with neighboring India. The tension between the two world powers heightened following skirmishes at the border near Pangong Lake in Galwan Valley in eastern Ladakh in May. Around 20 Indian soldiers and an undisclosed number of Chinese soldiers were killed in overnight clashes on June 16.
The year also has seen an escalation in the US-Iranian hostilities after a US drone strike killed Iran's Revolutionary Guards Corps commander Qassem Soleimani.

There is no doubt that coronavirus has played a positive role in deescalating tension in some old confict zones such as in Syria where fewer civilians were killed in the war in Syria than in any other year since the confict began in 2011. The year also witnessed the diminishing of activities of the Islamic State terror group in Iraq and Syria. The situation in Yemen was calmer with wide steps toward ceasefire and reconciliation.

However, the pandemic was not able to prevent new conflicts from emerging, such as the renewed conflict between Armenia and Azerbaijan over the Nagorno-Karabakh region or the conflict between Ethiopia's federal government and defiant authorities in its northern Tigray region, where hundreds of civilians died, while tens of thousands have sought refuge in Sudan, as the confict threatens to further destabilize the Horn of Africa region.

According to the United Nations High Commissioner for Refugees (UNHCR)'s latest report, "some 79.5 million people had been forced from their homes due to persecution, conflict, and human rights violations." That number includes 29.6 million refugees, 4.2 million asylum seekers, as well as 45.7 million internally displaced people (IDPs).

War, conficts (both existing and new) and the coronavirus pandemic have all contributed to increasing those figures as the year has passed, stated the UNHCR report.
According to the report, the virus made things worse for refugees as the restrictions imposed globally to curb the spread of the virus also made it more difficult for refugees to reach safety. During the first wave of the pandemic, 168 countries fully or partially closed their borders, according to UNHCR. Ninety of those countries made no exception for asylum seekers.

## THROWING THE ECONOMY INTO DISARRAY

During last year, the coronavirus proved to be not only a public health emergency but also a major threat to the world's economy.

It has already caused global stock markets to crash, while lockdown measures have led the global economy into one of its most severe recessions. For example, China's gross domestic product (GDP) dropped by $6.8 \%$ in Q1 2020, compared with the same period in the previous year, while the US and the European Union (EU) saw their GDPs slumped by $34.3 \%$ and $12.1 \%$, respectively, in the Q2 2020

According to a recent study, compiled by online platform IG, the pandemic wiped nearly $\$ 6.7$ trillion from the world economy in 2020.

The forecast drop in global GDP - down $5.2 \%$ from $\$ 89.94$ trilion to $\$ 83.19$ trillion - is equivalent to the annual economic output of Germany and France combined.

According to the study, this would represent the deepest recession since World War II, and nearly three times as severe as the one caused by the 2008 credit crunch.

The analysis suggests that 346 billion working hours were lost globally in H1 2020, which is equivalent to 555 million full-time jobs worldwide.
After the World Health Organization (WHO) declared COVID-19 a global pandemic, central banks around the globe have announced an emergency to counter the impact of COVID-19 on the struggling economy.

Despite hopes that the global economy should rebound in 2021, this recovery could not be felt until a vaccine is widely available, as possible further waves of COVID-19 may lead governments to reimpose restrictions. Potential challenges in the rollout of a vaccine, structural damage to labor markets and US-China tensions still pose risks.

According to World Bank statistics, global extreme poverty was expected to rise in 2020 for the first time in over 20 years as the disruption of the COVID-19 pandemic joined the forces of conflict and climate change, which were already slowing poverty reduction progress.
According to the report, COVID-19 was estimated to push an additional 88 million to 115 million people into extreme poverty in 2020, with the total rising to as many as 150 million by 2021.

In the meantime, the United Nations Educational, Scientific and Cultural Organization (UNESCO) estimated that nearly 24 million children, including 11 million girls may drop out of education in the coming year due to the pandemic's economic impact alone. According to UNESCO experts, this will threaten to reverse decades of progress made toward gender equality.

## OIL, GAS DILEMMA

In the oil and gas world, 2020 was the historic year where oil recorded negative prices for the first time ever when US oil benchmark West Texas Intermediate fell from $\$ 17.85$ at the start of the trading day to negative $\$ 37.63$ by the close. This comes at a time when the Organization of the Petroleum Exporting Countries and its allies (OPEC+) group have agreed to cut output by 10 million barrels a day ( $\mathrm{mmbb} / \mathrm{d}$ ) in an attempt to stabilize oil prices after a decline in demand and a prices war by Saudi Arabia and Russia led oil markets to crash.
According to experts, even the roll-out of vaccines by the end of the year is not expected to quickly reverse the destruction wrought on global oil demand.
"The understandable euphoria around the start of vaccination programs partly explains higher prices but it will be several months before we reach a critical mass of vaccinated, economically active people and thus see an impact on oil demand," the International Energy Agency (IEA) warned in its latest monthly report.
The IEA revised downits estimates for oil demand in 2020 by 50,000 barrels per day (bbl/d) and for next year by $170,000 \mathrm{bbl} / \mathrm{d}$, citing scarce jet fuel use as fewer people travel by air.

Although the oil and gas sector is used to the highs and lows of economic and price cycles, this downturn seems unlike any other, said a recent report by Deloitte which provides industry-leading audit, consulting, tax and advisory services to many of the world's brands.
According to the report, the year has witnessed "great compression" of the oil and gas industry. "With the survival of many companies at risk, and the longer-term decline in petroleum demand, the next decade could look very different for the entire oil and gas value chain," said Deloitte who thinks 2021 will either be a leapfrog year or a test of endurance for many.
Most oil companies have to enter 2021 with tactics to guard against downside risks and to be ready for any potential upsides. Such tactics may include accelerating digital transformation, maintaining flexibility in their operations, and optimizing their capital allocation for their future projects.

## THE BRIGHT SIDE OF AN OMINOUS YEAR

The pandemic and lockdown policies did not only affect production activities and people's lifestyles, but also lead to substantial changes in energy consumption and harmful emissions. For example the IEA projected a decline of global CO2 emissions by $8 \%$ in 2020, which led the CO2 emissions level back to 10 years ago.

A green pandemic recovery could cut anticipated emissions in 2030 by up to $25 \%$ and increase the chances of keeping the world below a 2-degree Celsius scenario by up to $66 \%$, according to a UN report published in December.
Throughout the year, COVID-19 hasforced many organizationsto undergo importanttransformation, rethinking key elements of their business processes and use of technology to maintain operations while observing a changing landscape of guidelines and new procedures.
It is difficult to imagine how rough 2020 would have been without remote communications tech. Zoom and similar tools enabled companies to switch to remote meetings. The amount of traffic online jumped dramatically, and the internet mostly handled it easily.

The COVID-19 pandemic highlighted the need for cross-border scientific collaboration, as well as the need for proper tools to maintain and support this collaboration, especially during emergency situations
Hard as it was, 2020 can be seen as a window for new opportunities for science and economics, leading to roads that were not noticeable before.
 HELD UNDER THE PATRONAGE OF HIS EXCELLENCY ABDEL FATTAH EL SISI, PRESIDENT OF THE ARAB REPUBLIC OF EGYPT


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# EGYPT'S OIL AND GAS PARTNERSHIPS: A SILVER LINING AMID INDUSTRY CRISIS 

BY FATMA AHMED

2
020 was dominated by coronavirus which affected most of the industries worldwide, but the Egyptian petroleum sector has a different story to tell. Despite the economic recession and lockdowns in most countries, the Egyptian oil and gas sector managed to keep adequate performance at many levels. However, cooperation and partnership agreements, conducted through our the year, can be seen as a cornerstone that reinforced the industry's structure amid the pandemic crisis.

## COOPERATION MAKES A DIFFERENCE

Cooperation and partnerships are vital aspects in any industry particularly, oil and gas. Most of the industrial official leaders agree that alliances can improve performance by sharing good practices which help in pushing the production wheel forward.
"Infast-moving markets alliances are becoming a norm as the level of conflictis minimized by partners recognizing that they are the only vehicle for minimizing the risk associated with market and technology uncertainty," according to Newman and Chaharbaghi's, Strategic Alliances in Fast-moving Markets, copyright 1996 Elsevier Science Ltd.

Additionally, the Minister of Petroleum and Mineral Resources, Tarek El Molla, emphasized the importance of cooperation between countries especially to overcome the pandemic crisis and its consequences on the energy future.
For Rex W. Tillerson, ExxonMobil's CEO, partnerships are necessary to ensure that there is an incentive to make significant investments to develop the industry and meet the energy demand challenge.
Despite the difficulty of conducting direct meetings last year due to Coronavirus precautionary measures, virtual meetings emerged as a solution that kept cooperation possible. And despite the lockdown conditions, Egypt's oil and gas sector thrived with several agreements signing and collaborations initiatives at international and regional levels as well as several partnerships between international oil companies (IOCs) and National Oil companies (NOCs).

## REGIONAL AND INTERNATIONAL DEALS AND MOUS

The Ministry of Petroleum and Mineral Resources (MoP) signed a number of agreements and Memoranda of Understandings (MoUs) during 2020 with other countries to enhance investments in Egypt.

One of the important agreements in this regard was the Engineering, Procurement and Construction (EPC) agreement signed by the Minister of Petroleum and Mineral Resources, Tarek El Molla, with the Italian Ambassador to Egypt, Giampaolo Cantini, for establishing a Mazut Hydro-cracking Complex in Upper Egypt at a cost of $\$ 2.5$ billion.

El Molla also signed an MoU with his Somali counterpart Abdel Rashid Mohamed

Ahmed to enhance co-operation between Egypt and Somalia in the fields of oil, gas and mineral resources.

Egypt and Greece have signed a demarcation deal which established an exclusive economic zone between the two sides and paved the way for more cooperation agreements in the field of energy. Moreover, Egypt has signed a Memorandum of Standing (MoU) with the Hungarian Ministry of Foreign Affairs on cooperation in Energy between the diplomatic studies institutes in both countries. El Molla ended the year by launching an energy efficiency capacity program with the European Union.

## COOPERATION DISCUSSIONS

In 2020, several bilateral discussions have been held with other countries to boost cooperation and support the Egyptian oil sector.
In March, El Molla held a meeting with United States Secretary of Energy, Dan Brouillette, to discuss bilateral relations in the petroleum and natural gas field in addition to US companies' investments in Egypt. In August, the minister conducted a meeting with the Cypriot Energy Minister, where they discussed the preparations for establishing a direct marine pipeline between the two sides.

In September, El Molla discussed with the French Ambassador to Cairo, Stephane Romatet, ways to enhance cooperation opportunities between the petroleum sector and French companies. Another meeting was held between El Molla and the Hungarian Ambassador to Egypt, András Kovacs, to discuss ways of cooperation in the oil and gas industry.

President Abdel Fattah Al Sisi supported these collaboration efforts by conducting a meeting with the Greek Minister of Energy and Environment, Kostis Hatzidakis, during the president's visit to Athena, where he tackled ways for supporting the mutual cooperation in new, renewable and conventional energy.
In November, El Molla discussed with the Korean Ambassador, Hong Jin-Wook partnership opportunities in the oil and gas sector. He held another meeting with Glenn Miles, Australia's Ambassador to Egypt, to explain the available mining investment opportunities.

El Molla ended November by a meeting with the newly appointed European Union (EU)

Ambassador to Egypt, Christian Berger, to discuss their partnerships in the energy sector and how to boost it.

## AFRICAN COOPERATION

Regarding African cooperation, Noha Khedr, Egypt's ambassador to Senegal, met with Sophie Gladima, Senegalese Minister of Mines and Geology, to discuss ways to increase cooperation in renewable energy and petroleum, Not only that, but Egypt also brokered the signature of the cooperation agreement between the African Export-Import Bank (Afreximbank) and AEICORP. El Molla also met with Nigeria's Minister of State for Mines and Steel Development, Uchechukwu Sampson Ogah, to discuss ways to improve cooperation in the field of mining and collaborate on proposed joint projects between the two countries.

During Egyps 2020, Petroject Company has signed MoU with the Guinean Minister of Mines and Hydrocarbons Gabriel Mbega Obiang in addition to a related agreement with the Arab Contractors Company to cooperate in projects in Equatorial Guinea.

## COOPERATION WITH ARAB NEIGHBORS

MoP also was keen to strengthen ties with Arab sister countries. El Molla met the Iraqi Ambassador to Cairo, Ahmed Nayef Al-Dulaim where they discussed the possibility of establishing a joint company and ways to enable Egyptian companies to participate in Iraqi projects. The two countries also discussed proposals for establishing a pipeline to transport crude oil from Iraq to Egypt and Jordan.

El Molla also signed an MoU with his counterpart, Insan Abdul Jabbar for supporting Iraq in a number of major projects in infrastructure, energy, electricity, oil, and gas. He convened an additional meeting with the Iraqi Minister of Industry and Minerals, Manhal Aziz, where they discussed ways to boost bilateral cooperation in the mining sector and how to benefit from the Egyptian expertise in the Iraqi market.

## GOVERNMENT AND IOCS: A ROBUST TIE

2020 has witnessed stronger cooperation between the loCs and the Egyptian government in different areas including developing human resources, exchange experiences and technological applications in addition to boosting production, operation services and investments.

The Egyptian General Petroleum Corporation (EGPC) and Methanex Egypt signed MoU to enable collaboration between both parties to strengthen the culture of Process Safety Management (PSM) in the Egyptian industry.

Egyptian Petrochemicals Holding Company (ECHEM) went into an agreement with Bechtel to establish a $\$ 6.7$ billion petrochemical plant and refinery in the Suez Canal Economic Zone. It also signed an agreement with BSW Group and Shard Capital to develop a refinery and petrochemical complex in New Alamein worth around $\$ 8.5$ billion.

Moreover, Petrojet has entered several deals including the contract that was signed with the Egyptian Ethylene and Derivatives Company (ETHYDCO) and Saipem for establishing the first polybutadiene plant in Egypt worth $\$ 150$ million. It also conducted an engineering master service agreement worth $\$ 1$ million with the Bilfinger Tebodin Middle East Company. Additionally, another two deals were signed with Saipem to implement projects in Libya and offering advanced training programs for Egyptian cadres.

ENOC Misr, which is a joint venture between Proserv Group and the Emirates National Oil Company (ENOC), has signed MoU with the lubricant manufacturers to evaluate blending and manufacturing lubricant in Egypt. BP Company has signed an agreement with the ministry to develop human resources. It signed one more agreement with EGPC in the field of marine supply.

Schlumberger signed agreements with Ain Shams University, the American University in Cairo (AUC), the German University in Cairo (GUC), and the British University in Egypt (BUE) for training their science, technology, engineering, and mathematics (STEM) students. It, also, cooperated with the General Petroleum Company (GPC) to introduce new Pulsar Multifunction Spectroscopy (PNX) technology for the first time in Egypt to increase production efficiency from brownfiled.

Additionally,Schlumberger signed an agreement with EGPC to build, operate and transfer Egypt's Upstream Gateway. Schlumberger inked another MoU with the Petroleum Ministry to spread awareness and enhance collaboration on sustainability initiatives. Another agreement was signed with BP to boost cooperation in the digitization of the East Mediterranean gas upstream market.

Empresa Nacional Del Petroleo (Enap) Company went into an agreement with EGPC to meet the growing local demand for petroleum products, develop the exploration and production (E\&P) activities. CAFU, the MENA region's first on-demand fuel delivery service, signed MoU with EGPC to provide regulatory support and enable its launch across Egypt

United States Trade and Development Agency (USTDA) has signed an agreement
with the ministry to enhance cooperation in developing the sector and its infrastructure. Assiut National Oil Processing Company (ANOPC) has conducted an EPC contract with TechnipFMC and Enppito establish mazut hydrocracking complex at a cost of $\$ 2.8$ billion. Petroleum Marine Services (PMS) and Deep Tech Company have allied to develop a rapid emergency intervention plan for the Zohr project at a depth of 1,500 meters below sea level.

The Egyptian Natural Gas Holding Company (EGAS) and TAQA Arabia signed a cooperation protocol to deliver natural gas to EI Wadi El Gedid by utilizing compressed natural gas (CNG).Also, Egyptian Automotive and Trading Company (EATC) is collaborating with Volkswagen (VW) and the Arab Organization of Industrialization (AOI) on launching two vehicle models of Crafter and Cadi 5 equipped with a natural gas engine.

BGS Energy Services began cooperation with Alexandria Petroleum Company (APC) to implement pre-commissioning and commissioning activities for its "U-3000 Project" which saves $\$ 85$ million per year. Petromaint and Petro Scope have inked MoU to utilize technology in rationalizing energy consumption. Moreover, EGPC and Eni have reached an agreement to re-open Damietta liquefaction plant during Q1 of 2021.

A consortium of Egyptian companies including EGAS, the Egyptian International Gas Technology (gastec), and the Natural Gas Vehicles Company (CAR GAS) signed two deals with the Italian Landi Renzo company for locally assembling of natural gas supply stations. Chevron signed two agreement with EGPC and Alexandria Mineral Oils Company (AMOC) to cooperate on a commercial and technical basis in the fields of refining. Shell also signed an agreement with MoP to cooperate in training young calibers and middle managers. Furthermore, EGAS, Egyptian Drilling Co., and Vantage International signed an MoU to begin a deep-sea drilling training program.

## E\&P AGREEMENTS

Many exploration and production (E\&P) agreements were signed especially, during Egyps Conference to reinforce the sector's successes. Shell signed four exploration and production (E\&P) agreements with EGPC in East Horus, Abu Sennan, West Fayoum, and Badr 2 and Badr 17 with total costs of $\$ 117$ million and a signature bonus estimated at \$ 61million Apache inked two E\&P agreements with EGPC in West Kanayes and West Kalabsha at a total cost of $\$ 26.3$ million and a signature bonus of $\$ 10$ million.

EGAS, Shell, and Petronas cooperated in an E\&P agreement in Fanar offshore and North Sidi Gaber Offshore valued at $\$ 309$ million and signature bonus of $\$ 13$ million. ExxonMobil and EGAS signed two E\&P contracts in East Ameryah offshore with total costs of \$332 million. Wintershall Dea and EI Molla have signed a concession agreement for the East Damanhour block. Neptune Energy signed an exploration license with EGPC for Egypt's North West El Amal Offshore Concession,

In addition, other 12 agreements were conducted with a group of international companies including Chevron, Edison, BP, Total, Shell, Nobel, Kufpec, and Mubadala, eight of the agreements were signed with the Egyptian Natural Gas Holding Company (EGAS) and three with Ganoub El Wadi Petroleum Holding Company (Ganope), in addition to another one with the Egyptian General Petroleum Corporation (EGPC).

## NOCSSTAND TOGETHER

Moreover, NoCs, hand in hand, cooperated in different fields of the industry throughout the year.

ENPPI signed a cooperation protocol with Alexandria University to improve the skills of the company's employees. Additionally, Enppi and Petrojet cooperated in implementing Ain Sukhna's SUMED Product Hub to meet the local market needs from petroleum products, imports, storages, and re-exports.

Furthermore, Western Desert Operating Petroleum Company (WEPCO) signed a deal valued at $\$ 5$ million with Enppi to engineer the Distributed Control System (DCS) of crude oil project at Al Hamra Petroleum Port in El Alamein. APC inked a deal with the Egyptian Projects Operation and Maintenance company (EPROM) to develop a 3D model using laser scanning technology for all the company's units and facilities

Regarding joint training, WEPCO and Petrosafe have introduced a joint oil spill response drill in Al-Hamra Petroleum Port in the Mediterranean to combat marine petroleum pollution. Suez Methanol Derivatives Company signed an MoU with the Egyptian Maintenance Company to construct a methanol derivatives facility in Damietta.

Egypt gas conducted several agreements with its counterparts. One of them was signed with the Egyptian Company for Natural Gas Distribution in Cities (Town Gas) to deliver natural gas to areas in several governorates. It also signed an EGP 11.2 million contract with the Construction Products Holding Company (CPC) to deliver natural gas to the new CPC industrial complex project in Sadat City.

These cooperation and partnerships indicate that the Egyptian oil and gas sector is running in full swing to open new investment opportunities, looking forward to further progress and holding the economy up.

# DESPITE COVID-19, EGYPT'S RESEARCH SCENE FLOURISHES WITH NEW APPLICATIONS, TOOLS 

BY FATMA AHMED

Despite the challenges imposed by the coronavirus outbreak in 2020, the oil and gas research scene thrived with many outstanding research papers to help Egyptian petroleum achievements be at the forefront of the industry. In our year-end issue, Egypt Oil and Gas (EOG) selected two of papers that happened to address some of the important topics that were addressed too in our issues during 2020.

## NEW APPROACHES FOR ROCK TYPING METHODS

The first research paper is entitled "Applying New Rock Typing methods and Modelling for Conventional and Unconventional Reservoirs". It is written by Mohamed Omran, Graduate Research Engineer at Norwegian University of Science and Technology (NTNU) and Carl Fredrik Berg, Associate Professor at NTNU.
The paper presented two new approaches for unconventional gas reservoirs rock typing methods. Rock typing is a technique used to predict the spatial distribution of petrophysical parameters such as porosity, permeability and saturation, on a field-wide level. It helps in defining the features of the reservoir which have great influence on the exploration and development process. The rock typing method is based on the degree of heterogeneity of the reservoir.
The area in question was Upper Safa formation which is an unconventional shale gas reservoir located in the Western Desert of Egypt. The researchers automatically adjusted rock type classes by optimization routines using Specific Surface Area Per Unit Grain Volume (SG) and Total Organic Carbon Content (TOC). Then, they compared the results to other conventional rock typing methods including Amaefule and Discrete Rock Types (DRT).

SG is a newly established rock typing method and can be applied for unconventional reservoirs. It can be identified by using their relationship with normalized porosity. TOC is also a new rock typing method applied
for unconventional reservoirs. It can be defined by using ROCK Eval pyrolysis classifications depending on the volume of kerogen and level of maturity.

On the other hand, Amaefule method has been applied for conventional rock typing and it is based on the permeability and porosity values as well as estimating the reservoir quality index and flow zone indicators. DRT method, also, has been applied for conventional rock typing and based on the physics of the flow in pore space and geological parameters.

According to the study, the researchers fixed the number of rock types to four to conduct the comparison and adjusted the boundary values so that the rock type method had the best match with the underlying data for all methods. The optimization was solved in a spreadsheet, using a generalized reduced gradient nonlinear solver algorithm and the predicted values for each rock types were fitted by a simple power law model.
This paper concluded that by optimizing the number of rock types through changing the rock type boundaries, all methods show a significant increase in accuracy. The accuracy of DRT method is increased from $87 \%$ for 13 classes to $98.32 \%$ for four classes, so it is applicable for unconventional reservoir, as well. Additionally, accuracy of SG method reached 96.02\% from $85 \%$ after optimizing the rock type boundaries. Per the accuracy of Amaefule, it is increased to 91.46\% for four rock types from $84 \%$ for five ones. Moreover, TOC accuracy rose from 67\% for five rock types to 80\% for four rock types.

## OCTOBER FIELD FORMATION WATERS ANALYSIS, WATER INJECTION

The second paper that will be addressed in this review is entitled "Downhole Scales Associated with October Field Formation Waters and Water Injection Using a Shallow Aquifer" by Mohamed Askar, Well Integrity Engineer at Gulf of Suez Petroleum Company (GUPCO), Ahmed Abdallah, Acting Section Head at GUPCO and Ibrahim Gad, Assistant General Manager at GUPCO.

This paper presented tools for scale inhibition methods or products for new wells drilled in October which includes wells of Nubia, Nezzazat and Upper Rudeis, or any analogous field. It can compensate for the gap between commercial scale prediction software and actual scale deposits. It also will check the usage of shallow aquifer water in supporting some reservoirs in terms of scale deposition risk.
Scale deposition in the oil wells represents a serious problem facing the industry. It occurs when the solution equilibrium of water is distributed by pressure and temperature changes, dissolved gases or incompatibility between mixing waters. It is more severe in depleted reservoirs and reservoirs injected by water. Some hard scales need heavy mechanical methods or special chemical substances to be totally removed. So, it is better to prevent scale before happening and that is the aim of the paper.
The researchers concluded that this can be done through analyzing scale samples. They analyzed more than 300 scale samples in October field. They obtained 240 digital scale-sample analyses to be processed in this study in addition to 180 complete analyses for wellhead water samples. These scale samples were collected between 1998 and 2018 by slickline tools. They studied, filtered, and grouped these water analyses to define the formation and blocks according to their predominant scale type and relate it to water chemistry and formation conditions.

The researchers followed two approaches. The first one was to study every well separately and define the most common scale type throughout its full production life from the same formation. The second approach was to analyze every scale sample that is common in several wells independently to consider the similarity in the formation to form a certain type of scale. After analyses, they reached to several results.
The most important ones are: scale inhibition by squeeze is preferred to prevent carbonates and sulfides as they may deposit at deep depths even before entering the production tubing. It is recommended to use sulfate-fighting scale inhibitor into the formation of Nubia and Nezzazat formations to prevent sulfate scale depositions. Additionally, the introduced data of formation downhole conditions, water chemistry, and scale depositions, can be used as a guide for scale management in other analogue fields to predict scale types, according to the study. Finally, the scale prediction still faces many challenges and it is expected to be enhanced through connecting field big data with Machine Learning (ML) and Artificial Intelligence (Al).

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## EMBRACING BIG DATA FOR BIG DISCOVERIES

D
igital transformation and managing big data have become essential parts in the future of the oil and gas industry in Egypt. In order to maintain sustainable production and long-lasting development, it is important to find new acreages for exploration and adding new petroleum discoveries. However, one of the biggest challenges in the upstream world of the oil and gas industry is collecting different types of data and analyzing the rapidly growing amount of data.

For example, the acquisition and processing of seismic data in an exploration program can gather enormous amount of data in a small area. Geoscientists spend about $60 \%$ of their time filtering and organizing data from different sources This requires highly advanced software and sensors to manage and store these data, in addition to a significant amount of time spent on massaging rather than mining or modeling data. Nonetheless, the case is not about the big data that we have, it is about our ability to manage these data to transform it into valuable input to reduce risks in the exploration and drilling process. Hence, the way we control and manage data in an exploration program determines, to a large extent, the success ratio we can achieve.

All these technical challenges delayed the exploration activities in Egypt in the last decades. For this reason, the Egyptian Ministry of Petroleum and Mineral Resources in cooperation with Schlumberger started an ambitious project for embracing big data in the Egyptian petroleum sector. According to this project, all the petroleum data will be loaded on a digital portal with a huge amount of storage. This introduces a consistent database for all the acquired petroleum data in Egypt over the last century. This project will accelerate the process of online purchasing of technical data packages for each region without the need for companies to visit the data center. Also, it will facilitate investments in the field of exploration and will provide the opportunity for the largest number of international companies to obtain data packages and apply for international bid rounds.

AHMAD MOSTAFA
EXPLORATION DEPARTMENT HEAD SOUTH VALLEY
EGYPTIAN PETROLEUM HOLDING COMPANY (GANOPE)


# EXPLOITATION OF OILFIELD WATER AND ITS ENVIRONMENTAL IMPACT 

$-$xtraction/Production of oil and gas from underground reservoirs often is accompanied by water or brine, which is referred to as produced water. As oil and gas reservoirs become mature, the quantity of produced water increases and often exceeds the volume of the hydrocarbons before the reservoir is depleted. The cost of producing, handling, and disposing of the produced water usually defines the economic lifetime of a field and the actual hydrocarbon reserves.

The produced water (water cut) of oil/gas well is initially low, so some surface facilities do not take the produced water into consideration to reduce the upfront capital cost of the project. However, that water can make up more than $90 \%$ of the produced fluids after wells have been in service for a long time. So, the impact of rising water cut (\%) on the total cost of producing a barrel of oil will increase with time, assuming a constant water treatment cost of $\$ 0.10$ per barrel of water. For example, with 62,000 barrels of water produced an hour in Congo, no water is disposed into the sea. Total Oil Company treats all produced water before reinjecting it into the underground reservoir which increases the oil barrel production cost there.

requirements of oil field operations, used as a drilling or production fluid, reducing the need of both using the natural water supply and disposing of the water produced into the surrounding environment. Its future growth, especially in offshore fields, is a motive for developing a new tool for low-cost treatment, appropriate handling and optimum exploitation of that water with very low environmental impact.

Water produced with oil is increasing in importance from an environmental standpoint. In the past, water was considered waste and required to be disposed of. Currently, it has become clear that possible contamination from produced-water disposal practices needs to be considered and evaluated. Some of the produced water from

One of the mostsignificant produced water developments during the last twenty years was related to the environmental impact and regulatory legislations. It is no longer a technical issue regarding the characteristics of the produced water from oil and gas extraction. Regulations worldwide, that deal with oil field produced water, have become stricter. When selecting a certain method to handle produced water, that method's reliability for the long term must be considered.

In 2020, the worldwide oil wells produced nearly 302 million barrels a day of water. Consequently, an average of three to five barrels of water is produced with one barrel of oil. That is because a large percentage of today's global production is from fields brought on stream 20 years ago. That water can be treated and reused to meet technical of wells is re-injected in subsurface formations. Re-injection of this water into the hydrocarbon reservoir will achieve three targets: it may help to produce an additional amount of oil/gas through a secondary recovery mechanism, it disposes a potential pollutant, and, in some areas, it controls land subsidence. Moreover, the treated water has a wide range of uses, including agriculture, food. and health.

# Eng. Mohsen Ahmed Farhan 

Drilling Department Head
General Petroleum Company (GPC)


## EGYPT

RESEARCH \& ANALYSIS

VALUE AND VOLUME OF SHARES TRADED FOR ENERGY \& SUPPORT SERVICES SECTOR IN NOV 2020




Source of Raw Data: CBE, CAPMAS, Egyptian Exchange, HIS Markit

| IMPLEMENTED PETROLEUM PROJECTS OVER FYS (2018/19-2019-20) |  |  |
| :---: | :---: | :---: |
| IMPLEMENTED | M PRO |  |
| fy | Number | Investments EGPbulion) |
| 2018/19 | 19 | 334.6 |
| 2019/20 | 18 | 96.7 |
| TOTAL | 37 | 431.3 |

PROJECTS DISTRIBUTION OVER GOVERNORATES


PETROLEUM TRADE BALANCE PERFORMANCE IN FY 2019/20

(-) \$421 million Petroleum Trade Balance
\$8.5 billion Petroleum Exports
\$1.1 billion
Petroleum Net FDI

20.4\%

Petroleum Sector Share Net FDI

PETROLEUM PRODUCTS SUBSIDIES (EGP BILLION)


## \$. INTERNATIONAL OIL PRICES

BRENT PRICES (\$/BBL)

| 09 Oct |  |
| :--- | :---: |
| 20 Oct | 42.85 |
| 16 Nov | $\mathbf{4 3 . 1 6}$ |
| 25 Nov | $\mathbf{4 3 . 8 2}$ |
| 09 Dec | $\mathbf{4 8 . 6 1}$ |
| 17 Dec | $\mathbf{4 8 . 8 6}$ |

OPEC BASKET PRICES (\$/BBL)

| 09 Oct | 41.61 |
| :---: | :---: |
| 20 Oct | 41.04 |
| 16 Nov | 42.93 |
| 25 Nov | 46.91 |
| 09 Dec | 48.31 |
| 17 Dec | 50.78 |

NATURAL GAS PRICES (\$/MMBTU)

| 09 Oct | 2.74 |
| :---: | :---: |
| 20 Oct | 2.91 |
| 16 Nov | 2.70 |
| 25 Nov | 2.90 |
| 09 Dec | 2.44 |
| 17 Dec | 2.64 |

## Baker Hughes Remote Operations Services: At a glance

|  | 2019 |  | $5.15$ | 2020 |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Executed | Drilled or logged | Drilled | Executes | Delivers | Deploys from |
| $\square \triangle$ | $3,350$ | 42 MI | 0 | services in | ) |
| of the company's | onshore wells | 42 MiL | 0010 | ) |  |
| total drilling jobs | in North Ameicica lione | feet globally | of the company's |  | ers an |

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[^0]:    $M$
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[^1]:    WHAT WAS THE MINISTRY'S MECHANISM TO HELP ITS FOREIGN PARTNERS ESPECIALLY THE IOCS OPERATING IN EGYPT DURING THE CHALLENGES THAT WERE FACED IN 2020?

