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AN INTERVIEW WITH
DENISSE ABUDINÉN

CEO ENAP SIPETROL AND GENERAL MANAGER
ENAP SIPETROL EGYPT BRANCH



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 **EGYPS**
EGYPT PETROLEUM SHOW



EDITOR'S LETTER

Achieving Gender Parity

One of the obvious impacts of the pandemic is reducing the economic participation of women across major sectors, mainly in decision-making roles, rolling back some of the significant gender parity milestones that were achieved in recent years. The world celebrates this month, the international women's day. Thus, EOG's March issue delves into the prospects of empowering women in the energy industry.

We are pleased to have the chance to meet with Denisse Abudinén, CEO ENAP Sipetrol and General Manager ENAP Sipetrol Egypt Branch. Abudinén shared with us the latest updates of the company's activities in the Egyptian oil and gas industry. She additionally reveled the company's future plans in the Egyptian market.

Our Research and Analysis team prepared an analytical report about the natural gas exploration in drilling activities in Egypt. The technology section discusses the impact of manufacturing execution system in oil and

gas operations. While the energy economics section highlights Egypt's plans to increase its involvement in the green bonds market. The political section sheds light on Yemen war spillover in oil and gas dynamics.

Moreover, March issue includes a full coverage for the conferences and awards of the fifth edition of EGYPT Petroleum Show (EGYPS).

Wishing you an informative read!

MAHINAZ EL BAZ

Acting Editor-In-Chief
Research & Analysis Manager

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CEO ENAP Sipetrol and General
Manager ENAP Sipetrol Egypt branch



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EGYPT
OIL & GAS
NEWSPAPER

EGYPT'S LEADING OIL & GAS MONTHLY PUBLICATION

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 - Reduced NPT and ILT

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TOP 5

EGYPT TO JOIN TOP LNG EXPORTERS

Egypt is on its way to join the world's top liquefied natural gas (LNG) exporters as it supplies major natural gas consumers, on top of which is Europe.

Egypt moved from an importer of natural gas to achieve natural gas self-sufficiency and becomes an exporter.

According to the cabinet report, Egypt's exports increased by 123.3% in eight years as the country exported 6.7 million tons of LNG in 2021, compared to 3 million tons in 2013.

Egypt ranked the 14th on the list of global natural gas producers, the fifth regionally, and the second in Africa during 2020, producing 58.5 billion cubic meters (bcm).

Meanwhile, Europe uses 14.2% of natural gas consumption around the world, recording 541.1 bcm in 2020, the Cabinet stated.

The sharp decline in Europe's natural gas production from 2019 to 2050 will increase the European market's dependency on external suppliers to cover future demands.

EGYPT EYES \$7B IN FDI FOR PETROLEUM SECTOR

Egypt eyes \$7 billion in foreign direct investment (FDI) for the oil and gas sector during fiscal year (FY) 2022/23, Minister of Petroleum and Mineral Resources Tarek El Molla stated.

El Molla said in an interview with Al-Arabiya that the surplus in the petroleum trade balance reached

\$600 million in FY 2020/21, and it also recorded a positive number during the first half of FY 2021/22.

The minister further revealed that "technical problems have hindered the start of gas exports to Lebanon, and it is expected to start within two months."

Egypt expects to start exporting 60 million to 65 million cubic feet of gas per day to Lebanon

EL MOLLA: EGYPT'S PETROLEUM EXPORTS INCREASED BY 84.28% YOY

Minister of Petroleum and Mineral Resources Tarek El Molla stated that Egyptian oil and gas sector exports increased by 84.28% year on year (YoY), reaching \$12.9 billion in 2021, compared to \$7 billion in 2020.

El Molla told Reuters that the value of Egypt's exports of natural and liquefied gas jumped by 550% during 2021 to reach \$3.9 billion, compared to \$600 million in 2020. Meanwhile, Egypt's exports of crude oil increased last year by 32%, to reach \$3.3 billion, compared to \$2.5 billion in 2020.

Additionally, Egypt's exports of petroleum and petrochemical products increased by 42.5% during 2021 to reach \$5.7 billion, compared to \$4 billion in 2020, El Molla noted.

EGYPT'S PETROCHEMICALS REVENUES GROW BY 50% IN FY 2020/21

Fitch Solutions announced that Egypt's petrochemical production has reached 3.34 million tons during the fiscal year (FY) 2020/21, achieving 50% growth in its revenues on an annual basis.

The report mentioned that the petrochemical sector's new projects implemented in Egypt include the methanol derivatives project in Suez worth \$119 million, the bioethanol project worth \$112 million, the Red Sea petrochemical complex with investments of \$7.5 billion which aims to add 3.7 million tons of petrochemicals annually, and the Al Alamein complex with investments of \$8 billion at a capacity of 4.7 million tons per year.

Fitch Solutions said that these projects will help Egypt achieve its aim to become a regional hub for trading oil and gas, especially in light of its strategic location. The agency affirmed that the Egyptian exports had grown on average 11% annually during the period between 2015 to 2020, which recorded \$3.1 billion in 2015 and \$5.2 billion in 2019.

The report added that the Egyptian economy is expected to achieve sustainable growth, potentially transforming from an importer to an exporter. It pointed to the fact that local products have become more competitive against imports.

FUEL PRICES INCREASED BY EGP 0.25 IN Q1 2022

Egypt's Fuel Automatic Pricing Committee has adjusted the fuel prices and increased them by EGP 0.25 per liter for Q1 2022.

As of February 4, the prices per liter are as follows; octane 80 at EGP 7.25; octane 92 at EGP 8.50; and octane 95 at EGP 9.50. As for diesel fuel, its price remained at EGP 6.75 per liter. This decision was driven by the average prices of Brent crude in the global energy market and the value of the Egyptian pound against the US dollar.

A BLAST FROM THE PAST



The Month of March has a remarkable place in the history of the petroleum sector in Egypt as it witnessed two significant structural reforms for the sector during the second half of the last century.

In March 1956, the Egyptian General Petroleum Corporation (EGPC) was founded to manage the governmental petroleum activities under the name General Petroleum Authority (GPA) and was affiliated with the Ministry of Industry at that time. In 1962, GPA's name was changed to the current name.

EGPC currently comprises 12 public sector companies, 41 joint venture Companies and 87 investment companies; in which EGPC is a shareholder, either by itself or through other affiliated companies. Its main objectives include meeting the local demand for petroleum products, improving the exploration and production (E&P) activities, enhancing oil reserves development, maximizing petroleum exports revenues and applying the international HSE standards.

Furthermore, in March 1973, Egypt established a separate ministry for petroleum and mineral resources to be responsible for the vital industry.

The ministry's mission is to set the petroleum sector strategies, focusing on maximizing the reserves and petroleum production to secure the needs of the local market and achieve the targeted economic growth. The ministry also works to transfer Egypt into a regional energy hub.

NUMBER OF THE MONTH



A Boom in Egyptian LNG Exports After An 8-Year Halt

123.3%

In March **2021**, Egypt exported its first liquefied natural gas (LNG) shipment from the Damietta liquefaction plant after an eight-year hiatus. Since then, **20** countries have imported Egyptian LNG. Additionally, four new markets have opened up for Egyptian LNG in **2021**, represented in Turkey, Croatia, Pakistan, and Bangladesh. It is worth mentioning that the total production capacity of the Damietta and Idku plants reached **12** million tons per year (mmt/y).

Accordingly, the Egyptian LNG exports doubled in **2021** to reach **6.7** million tons (mmt) up from only **3** mmt in **2013**. The value of the Egyptian natural and LNG exports reached **\$3.9** billion in **2021** compared to **\$600** million in **2020**, with a remarkable increase of **550%**, stated by the Minister of Petroleum and Mineral Resources Tarek El Molla.

Egypt is ranked as the second largest contributor in LNG exports globally from January to August **2021**, according to International Energy Agency (IEA).



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H.E. TAREK EL MOLLA
MINISTER OF PETROLEUM & MINERAL RESOURCES - ARAB REPUBLIC OF EGYPT



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BUDGET PLANS

EL MOLLA CHAIRS GENERAL ASSEMBLIES OF MISR PETROLEUM, COOPERATION PETROLEUM COMPANIES

Minister of Petroleum and Mineral Resources Tarek El Molla chaired the general assemblies of Misr Petroleum Company and Cooperation Petroleum Company (Copetrole) via video conference to approve the budget plans for fiscal year (FY) 2022/23.

During the two assemblies, El Molla pointed out the importance of the oil sector's companies continuing their development and modernization plans in various aspects of petroleum activities. This development brought these entities back on the right track and turned them into economic entities that efficiently manage their activities.

During the two meetings, Misr Petroleum Chairman Mohamed Shaaban and Copetrole Chairman



Ayman Naguib reviewed the most important features and projects of the investment budget for 2022/23. They also discussed the volume of works that were implemented to develop infrastructure, car catering stations, ship catering activities, oil marketing as well as the digital transformation of the two companies and the planned projects in this regard.

EL MOLLA APPROVES GUPCO, AGIBA, PHARAONIC PETROLEUM COMPANIES 2022/23 BUDGET PLANS

Minister of Petroleum and Mineral Resources Tarek El Molla emphasized the importance of increasing exploration and discovery activities during general assemblies of Gulf of Suez Petroleum Company (GUPCO), Agiba, and Pharaonic Petroleum companies to adopt the amended budget for the fiscal year (FY) 2021/22 and approve the proposed budget for 2022/23.



Agiba Petroleum Company Chairman Ahmed Mustafa stated that the planned investments in the 2022/23 budget amount to around \$553.5 million. Additionally, a production of 40,000 barrels of oil per day (bbl/d) and 18.5 million cubic feet of gas per day (mcf/d) is planned. He pointed out that the year 2021/22 witnessed the achievement of four discoveries which added 14.5 million barrels of oil equivalent (mmbbl) to the company's reserves, and three exploratory wells were placed on production with an average of 4,600 bbl/d and 5.3 mcf/d.

Meanwhile, Pharaonic Petroleum Chairman Hossam Zaki reviewed the terms of the proposed plan for the year 2021/22, which is planned to reach 435 mcf/d of natural gas and 9,400 bbl/d of condensate. He pointed out that the company plans to drill the "Osiris" exploratory well to assess gas reserves in the Ras El Bar concession area during the next fiscal year, which are estimated at 368 billion cubic feet (bcf) and 21 mmbbl of condensate.

EL MOLLA APPROVES PETROSHROUK, PETROBEL BUDGET PLANS

Minister of Petroleum and Mineral Resources Tarek El Molla chaired the general assemblies of Petroshrouk and Belayim Petroleum Company (PETROBEL) to approve their revised budget plans for the fiscal year (FY) 2021/22 and the proposed budget for 2022/23.



During his review of the business developments in Petroshrouk Company, Khaled Mowafi, the company's chairman, said that the status of the two wells, Zohr 15 and Zohr 16, in the southern region of the Zohr field, will be on production during the next few months. He noted that the year witnessed challenges in maintaining production rates from the field in the range of about 2.7 billion cubic feet of gas per day (bcf/d).

The investments in the amended budget amounted to around \$698 million to implement the exploratory and development activities, drilling operations, and implementation of station development projects and operations, Mowafi noted. He added that the targeted investments in 2022/23 reached about \$690 million to complete the work of exploration, discovery, and development activities and the optimization of marine facilities, such as the project to improve operating efficiency and water treatment.

Moreover, Petroshrouk has showcased a rich record of corporate social responsibility (CSR) work through the implementation of several development projects for the community surrounding the Zohr field in order to achieve

sustainable development goals. The company allocated a total value of EGP 125 million to development projects in the fields of health and education.

Meanwhile, Petrobel's Chairman Khaled Mowafi reviewed the amended budget items for the current fiscal year. He pointed out that the investments amounted to \$842 million to intensify research, exploration, and development operations after re-evaluating the already producing areas, as it is planned to drill the exploration well, Al Qar'a South-1, and drill 4 additional wells in the areas of Belayim and Baltim, southwest, in order to maintain and increase production rates.

Mowafi also discussed projects to measure flare gases and raise the efficiency of the water treatment plants associated with the fields, adding that the company has drilled eight onshore and offshore wells in the Abu Rudeis area.

ACHIEVEMENTS

OAPEC: EGYPT'S CONTRIBUTION BOOSTS ARAB GAS EXPORTS



A report from the Organization of Arab Petroleum Exporting Countries (OAPEC) on liquefied natural gas (LNG) and hydrogen during the fourth quarter of 2021 highlighted Egypt's strong contribution to boosting gas exports from Arab countries during 2021.

The largest growth contribution, as the OAPEC report showed, came from Egypt during the last quarter of the year as the two liquefaction plants in Egypt have resumed work at full capacity.

During Q4 of 2021, Egypt exported around 2.1 million tons of gas, compared to 1 million tons exported during the same period of 2020. This comes as the Damietta and Idku liquefaction plants worked at full capacity, exporting a total of 6.5 million tons via the two plants in 2021, compared to 1.5 million tons in 2020.

EGYPT SENDS FIRST LNG CARGO TO THE NETHERLANDS

Egypt has sent its first-ever liquefied natural gas (LNG) shipment to the Netherlands through the Damietta LNG Plant.

The total capacity of the cargo amounts to 174,000 cubic meters, which was shipped by LNG tanker Gaslog Glasgow and arrived at the Netherland's Gate Terminal in Rotterdam.

This shipment came as a part of Europe's effort to meet its gas needs in case of shortages amidst tensions on the Russia-Ukraine border.

The cargo is one of several recent shipments made by the Damietta plant since its resumption of operations in February 2021 after work was paused for nine years.

Petro Disouq Obtains ISO Certificates

Disouq Petroleum Company (Petro Disouq) was able to obtain the ISO 14001 and 45001 certificates for its headquarters in Cairo and its fields in Gharbia Governorate.

Out of the keenness of the General Director of Operations and Board Members Nasr Yassin to ensure the company's operational safety and high standards, he has called for conformity to international standards, since the beginning of its operations. Thus, the company began to achieve the desired goal.

Yassin has also sought to follow up on the effort exerted by the workers in a periodic and continuous manner. He also worked to provide all the capabilities and resources necessary for the employees in all the company's departments. In a race against time, Petro Disouq Company managed to quickly secure ISO certification after a short operating period that did not exceed two years.

DOWNSTREAM

EL MOLLA: BUTANE CONSUMPTION DROPS TO 3.6 MT IN FY 2020/21

The significant drop in butane consumption from approximately 4.2 million tons (mt) in 2018 to 3.6 mt in 2020/21 was achieved thanks to the development of the butane system and the expansion of projects to deliver natural gas to homes, Minister of Petroleum and Mineral Resources Tarek El Molla said during the Petroleum Gas Company's (Petrogas) general assembly chaired by him via video conference to approve the planning budget for FY 2022/23.

El Molla confirmed that developing and raising the efficiency of the system was instrumental in providing this strategic commodity in a safe and consistent manner to consumers during the past six years and overcoming challenges and crises.



Petrogas Chairman of the Board of Directors Raafat Abdel Hadi Raafat Abdel Hadi reviewed the most important features and projects of the investment budget for FY 2022/23. He also discussed the volume of work that has been invested in developing the infrastructure and areas for filling, production, and circulation of butane cylinders belonging to the company and the projects planned in this regard.

EGYPT CONNECTS NATURAL GAS TO 13M HOUSEHOLDS UNTIL JANUARY 2022

Minister of Petroleum and Mineral Resources Tarek El Molla announced that the Egyptian government has connected natural gas to 13 million housing units since the start of operation and until the end of January 2022.

He added that this saved about 234 million butane cylinders annually which came in line with the directions of President Abdel Fattah Al Sisi to expand natural gas utilization to replace butane to alleviate the financial burden over the state's budget for supporting butane cylinders.

El Molla noted that there is an ambitious plan to link 1.2 million households to the natural

gas grid during fiscal year (FY) 2021/22. He elaborated that the government is working on implementing this plan.

El Molla also said that natural gas is connected to 34 new regions for the first time during the current fiscal year, in addition to completing natural gas connections in other regions and installing 835,000 prepaid meters.

Furthermore, the meeting tackled the status of natural gas connections to develop the Egyptian rural areas under the Haya Karima initiative including 1,487 villages.

EL MOLLA REVIEWS PROGRESS OF NATIONAL NATURAL GAS STATIONS INITIATIVE

The Minister of Petroleum and Mineral Resources Tarek El Molla held a meeting with natural gas vehicles supply and car services companies to review the progress of the nation's natural gas station expansion program.

During the meeting, El Molla mentioned that 600 stations have been completed and there are 250 which are still in progress, while another 150 stations are pending approval. In this context, the minister highlighted the importance of coordination with the governors and facilities installation companies to accelerate starting operation.

Additionally, the minister emphasized the importance of completing the establishment of fuel conversion centers in a timely manner to meet citizens' needs, noting that 500,000 cars have been converted until now.



Meanwhile, Egypt Gas Chairman Wael Gawayed showcased his company's latest working updates in the New Administrative Capital. The meeting was attended by several petroleum officials and natural gas companies' chairmen.

IPTC CONFERENCE

EL MOLLA DISCUSSES ENERGY TRANSITION, COP 27 AT IPTC

Minister of Petroleum and Mineral Resources Tarek El Molla participated in a ministerial session within the activities of the International Petroleum Technology Conference (IPTC), which was hosted by the Kingdom of Saudi Arabia from February 21-23, 2022.

During the session, El Molla stated that the alliance between OPEC and OPEC+ is useful and successful, and that Egypt participates as an observer in these joint meetings, in which useful decisions and agreements are taken within the framework of this joint cooperation, as these policies succeeded in achieving stability in demand during the last period.

El Molla also expressed his appreciation to the Saudi Minister of Energy for the invitation to attend IPTC, which highlights the great changes that have occurred during the past few months and the importance of the Saudi green energy initiative.

Egypt is working on adopting the appropriate energy mix that allows crossing the transitional phase until the complete energy transition, El Molla said. He added that a strategy for energy until 2035 has already been drawn up for several years, which aims to reach the proportion of new and renewable energy in the energy mix to 42% by the year 2035.

BUDGET APPROVALS

EOG COMMITTEE MEETS TO FINALIZE 2022 STRATEGY

The Egypt Oil & Gas (EOG) Committee – Executive Board held a meeting to discuss the structure of the new committee and finalize the committee's strategy and activities of its task forces for the year 2022.

During the meeting, the committee's members agreed that the Energy Transition Task Force will work on the sector's participation in COP 27 in 2022 and prepare a plan to be presented to Minister of Petroleum and Mineral Resources Tarek El Molla. Other task force leaders including Sustainable Development, HSE, and Capacity Building leaders presented to the executive board their plans for 2022.

The Capacity Building Task Force's plan will include the participation of young professionals from universities and different activity groups (SPE, AAPG, AMAL, etc.) to join and partake in 2022 initiatives.

In addition, the Brownfield Task Force agreed to continue conducting technology transfer workshops in partnership with major companies. Meanwhile, the committee will organize a Safety Awareness Campaign in its plan for 2022 as a part of the HSE Task Force's activities.

EOG COMMITTEE HOLDS AWARD & APPRECIATION CEREMONY



The Egypt Oil and Gas (EOG) Committee meeting, which was held on January 20th, was topped off with an award and appreciation ceremony.

Osama Mobarez, Secretary-General of the East Mediterranean Gas Forum (EMGF), together with David Chi, EOG Committee Chairman and Vice-President of Apache Corporation & Country Manager for Apache in Egypt, and Egypt Oil & Gas CEO Mohamed Fouad recognized those who participated in drawing up the committee's new strategy. During the meeting, the committee members discussed the main features of this strategy, which came mainly to align with Egypt's Vision 2030 and its sustainable development goals (SDGs).

In addition, they honored the driving forces behind the success of the CSR training, which was conducted under the auspices of the Ministry of Petroleum and Mineral Resources.

Colby Fuser, Halliburton Vice President of Egypt and Libya Area, was also honored for his role in the committee.

The award winners were Ahmed Gabry, Shell Egypt; Enas Shabana, Ministry of Petroleum & Mineral Resources; Ayman Rady, Egypt Oil & Gas; Yasmin Ali, Kuwait Energy Egypt; Nermin Osama, Wintershall Dea; Heba El Karrar, Schlumberger; Nihad Shelbaya, ExxonMobil; Malak Wahba, ExxonMobil; Ahmed Zain, Apache; Asmaa Habashi, Apache; Raghda Fathy, Petronas; Noha Abd El Zaher, Enap Siptrol; Caroline Hagazi, Energean; Eiman Hamdy, IEOC; and Nihal Khalil, Petrojet.

SHELL LUBRICANTS

SHELL LUBRICANTS RENEWS CONTRACT WITH CENTAMIN

Shell Lubricants Egypt, a major partner in technical services and investment, is delighted to announce an extension of its contract with Centamin, the international gold producer, to supply lubricants to their Sukari Gold Mine (SGM) in Egypt.

The two companies have been partners at SGM since 2014 as the sole supplier of lubricants and the contract extension is for another five years till 2026.

This kind of partnership aligns with Shell Lubricants Egypt's strategy to cultivate progress that supports its customers in achieving commercial success, not only through supplying lubricants, but also via

supplying technical services, marketing activities, and various other solutions.

This renewal will have a direct impact on its customers, and contributes to environmental stability through the supply of oils and technical services that partake in reducing energy consumption and achieving economic growth.



ARAMCO

ARAMCO CLOSES DEAL ON NATURAL GAS PIPELINE WITH INVESTORS

Saudi Arabian Oil Company (Aramco) announced that it successfully closed a lease and leaseback deal signed with an international investor consortium, led by affiliates of BlackRock and Hassana.

According to the deal previously announced on December 6, 2021, the consortium has acquired

a 49% stake in Aramco Gas Pipelines Company, a subsidiary of Aramco, for \$15.5 billion.

Aramco elaborated that this consortium comprises leading institutional investors including, amongst others, Keppel Infrastructure Trust, Silk Road Fund, and China Merchants Capital.

"As part of the transaction, first announced in December 2021, Aramco Gas Pipelines Company

and Aramco entered into a 20-year lease and leaseback arrangement in connection with Aramco's gas pipeline network. Under this arrangement, Aramco Gas Pipelines Company will receive a tariff payable by Aramco for the specified gas products that flow through the network, backed by minimum commitments on throughput," Aramco said.



ENI

ENI, ENEA SIGN AGREEMENT FOR DECARBONIZATION, ENERGY TRANSITION

Eni announced that it has signed a joint cooperation agreement (JCA) with ENEA for developing decarbonization as well as ecological energy transition projects.

The agreement was signed by President of ENEA Gilberto Dialuce and the CEO of Eni Claudio

Descalzi for three years. According to Eni, the agreement will involve developing prototypes, technologies and innovative processes, feasibility studies and scenario analysis as well as exchanging skills and know-how.

Eni added that the agreement also includes the promotion of joint initiatives worth EUR 8 million comprising the supply of personnel as well as the technical and financial resources of both parties.



ENI, EDISON, ANSALDO ENERGIA TO CONDUCT FEASIBILITY STUDY FOR HYDROGEN PRODUCTION

Eni, Edison, and Ansaldo Energia have finalized an agreement to conduct a feasibility study on green hydrogen production, produced through water electrolysis, or blue with the use of natural gas, from which the CO2 produced is captured, with the aim of using natural gas to fuel the new Edison plant in Porto Marghera.

The plant has a total power capacity of 780 megawatts. It will use a high-efficiency turbine, equipped using technology designed to be powered by hydrogen. The plant is planned to start commercial operation within the second half of 2022.

The agreement came as a response to the need of developing the skills and technologies needed to contribute to the decarbonization of the electricity sector, in line with the European Green Deal.

DANA GAS

DANA GAS RECORDS NET PROFIT WORTH \$317 MILLION IN 2021

Dana Gas announced achieving a net profit of \$317 million in its preliminary unaudited financial results for the full year, which ended on 31 December 2021.

The company said that this increase came as a result of higher oil prices, improved operational performance, in addition to other income.

Also, Dana Gas has achieved revenues worth \$452 million in 2021, compared to \$349 million in 2020 due to higher oil prices and higher production in the Kurdistan Region of Iraq (KRI).



TOTALENERGIES

TOTALENERGIES AGREES TO SELL MINORITY INTERESTS IN WEST OF UK'S SHETLAND FIELDS

TotalEnergies declared that it has signed an agreement with Kistos Energy Limited to sell a 20% interest in the Greater Laggan Area fields and in the Shetland Gas Plant in the UK, in addition to interests in several nearby exploration licenses.

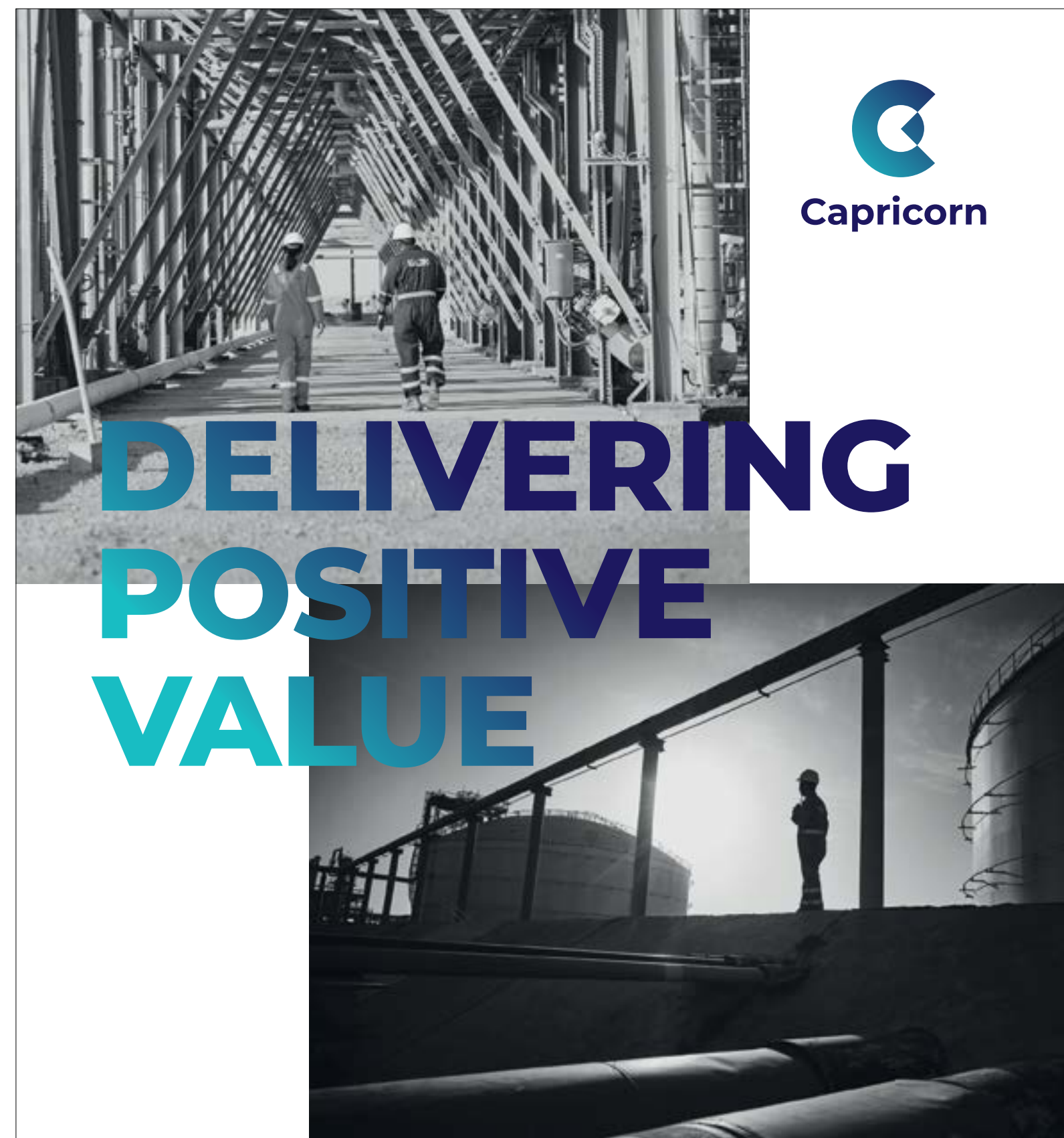
The transaction includes a firm consideration of \$125 million, in addition to two contingent payments, the first one up to \$40 million

depending on the natural gas price in 2022, and the second one in case of developing a discovery within exploration license.

It should be noted that the sale process is subject to the consent of authorities in the UK.

After completing the transaction, TotalEnergies E&P UK Limited will hold a 40% operated interest

in the Laggan, Tormore, Glenlivet, Edradour and Glendronach fields, including infield facilities and the onshore Shetland Gas Plant, alongside partners Kistos Energy Limited (20%), Ineos E&P UK Limited (20%) and RockRose UKOS15 Limited (20%).



Capricorn has a long-term commitment to Egypt. Our acquisition alongside our partners Cheiron of Shell's Western Desert oil and gas assets in September 2021 demonstrates our belief in Egypt as a country where we can successfully operate and grow our business. Always working responsibly, we are committed to delivering Net Zero by 2040 or earlier.

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DEPARTING COMFORT ZONE TO LIMITLESS OPPORTUNITIES

An interview with **DENISSE ABUDINÉN**
CEO ENAP Sipetrol and General Manager ENAP Sipetrol Egypt branch



How far did the Egyptian market meet the ambitions of Enap Sipetrol?

ENAP Board and its Management established in its strategic plan the definition of growing its operations and investments in Egypt besides our operations in the Western Desert in East Ras Qattara Concession. This is of course due to the excellent success that our branch has achieved during the past years and the great economic and institutional stability that Egypt provides for foreign investments in the country.

In addition to the favourable economic environment to expand our operations in the country, the Oil & Gas industry in Egypt offers very favorable fiscal conditions and a very active context full of business opportunities with excellent cooperation between the Governmental Institutions and Oil & Gas companies.

We are looking forward to increase cooperation between Egypt and Chile, emphasizing the two nations' historically solid relations, since diplomatic contact and cooperation date back 90 years. As a result, we wish to be part of these deep-rooted relations between the two countries.

Based on all these great economic conditions, the good relations between Egypt and Chile and the 24 years of ENAP Sipetrol's successful journey in the country, we intend to continue growing our branch.

Moreover, ENAP is eager also to contribute to the industry in different ways, such as the energy transition. As ENAP, we are developing studies to install Green Hydrogen production plants in Chile in collaboration with other partners. We also developed the first Geothermal Plant in the country as well as the first Wind Plant in Magallanes Region. We will be delighted to share our knowledge on Green Hydrogen projects with Egypt.

Could you highlight some of your company's recent activities in Egypt?

ENAP Sipetrol Egypt had a fantastic year in 2021 in East Ras Qattara Concession, as we resumed drilling activities in Q3-2021 following a Brent price hike, increasing output production from 8,000 to 12,000 BOPD.

We have already completed the first phase of the gas power generation project in East Ras Qattara Concession and succeeded to generate +/- 20% of the required power consumption for our fields by gas, and in 2022 ENAP Sipetrol is targeting to increase such ratio to reach 80%, which will have a very good impact on the environment and will maximize the value of the asset by significantly reducing the lifting cost.

We were also awarded a new concession in the last EGPC bid round, which is an excellent base for growing our portfolio in the country.

On the other hand, we just signed an MOU with the Ministry of Petroleum to support the training for young professionals in the industry.

Enap Sipetrol has just been awarded the West Amer Block in the Gulf of Suez, what is the plan of your company for this block?

This award is an important achievement for the company, which allows us to strengthen our exploration portfolio in Egypt, a country in which we have had very successful history. West Amer block is located on the onshore central Gulf of Suez and this new block will allow us to increase our reserves.

This award reaffirms our commitment to pursue high-quality opportunities in the country. We look forward to work with the government and deploy our proven expertise and advanced technology. ENAP Sipetrol will operate the block and hold 100% interest. Operations, including acquisition of seismic data, are scheduled to begin in 2023.

Do you have any other plans for Egypt during the upcoming period?

One of our top priorities for the Egypt branch is to maximize the value of our assets. For this purpose, a consolidated plan has been defined. For the East Ras Qattara concession, we will continue with our drilling program during 2022 to raise our production and reserves. Based on the last 3D seismic acquisition, we are also studying new exploration targets that will allow us to increase the potential of the block. At the same time, we will continue implementing our high operational efficiency plan. All of that will allow us to escalate East Ras Qattara's prospective as well as its value.

Regarding our new block, West Amer, we already started to plan the exploration activities for having the highest quality definition 3D seismic acquisition.

As ENAP Sipetrol, we will continue growing our Egypt branch in the coming years. For this objective, we will keep looking for new business opportunities in the country that fit with our strategy.

Could you elaborate if there is any plan for Enap Sipetrol to expand its business in other markets?

Currently, in addition to our branch in Egypt, ENAP Sipetrol has operations in Ecuador and Argentina with a daily production of 37,000 Boe. ENAP strategic plan has the main objective of growing our operations in Egypt and Ecuador, optimizing our assets in Argentina.

Based on that, we want to expand our activities in Ecuador since this has been a country where ENAP Sipetrol has had very good results during the 19 years of our operations there. We have three blocks in Ecuador with a daily production of 24,000 Bbls and an average annual investment of 80 million dollars. We are analyzing new assets in the country where we expect to grow our operations in the coming 2 years.

“ In addition to the good economic environment to expand our operations in the country, the Oil & Gas industry in Egypt offers very favorable fiscal conditions and a very active context full of business opportunities with excellent cooperation between the Governmental Institutions and Oil & Gas companies. ”

Regarding Argentina, we have two blocks with a daily production of 13,000 Boe. Due to the unstable economic situation in the country, we have been focusing our strategy on improving the performance of our assets, increasing the current production and optimizing the costs. Accordingly, we have reached very good economical results during 2021.

As ENAP Sipetrol we are always looking for more opportunities and we are open to exploring new markets that fit our strategy.

“ I have had several lessons learned, but if I have to choose the most important ones, I will start with getting out of my comfort zone. Being able to take risks, starting a new job, moving to a new country, and having new experiences that push you to leave your comfort zone and will allow you to grow significantly. ”

Could you share with us glimpses of your career journey and important lessons that made a difference for you?

I graduated as Civil Industrial Engineer from Pontificia Universidad Catolica de Chile and I have an MSc Business and Competitive Strategy from the same university. I also studied an MSc International Management at the University of London – Kings' College London.

In 2007, I joined ENAP as Planning Engineer at the Planning and Control Management. Then I held different positions, such as E&P Planning and Commercial Manager, Head of ENAP Corporate Strategy and Business Development as well as Corporate Manager of Exploration & Production Business Line (E&P). I also worked in the consultancy industry, as a Senior Client Development Advisor at McKinsey and Company developing the Latin America Energy Hub based in Mexico, which was a very enriching experience.

Currently, I am the CEO of ENAP Sipetrol and General Manager of ENAP Sipetrol Egypt branch and I am also in charge of the ENAP operations in Ecuador and Argentina.

In parallel, I am the co-founder of a non-profit organization that aims to provide food to the poorest people in Chile and we also trained entrepreneur women that had limited financial resources.

I have had several lessons learned, but if I have to choose the most important ones, I will start with getting out of my comfort zone. Being able to take risks, starting a new job, moving to a new country, and having new experiences that push you to leave your comfort zone and will allow you to grow significantly. This will broaden your world and your perception of it, making you more resilient and adaptable to new challenges.

The second lesson I learned, it is never to give up. Many times, I faced different barriers to reaching both my personal and professional goals. Nevertheless, if you keep working for your dreams and never give up, sooner or later these will become a reality.

As a successful working woman in the energy sector, can you give short tips for women on how to develop themselves?

In addition to my learned lessons that I just mentioned, I would like to highlight two important characteristics that have helped me to develop myself:

- ☑ Being a team member - not a female team member: I take the challenge of being sometimes the only woman in the team and the youngest one on the board as something positive. Inclusion and diversity are not just a nice statement at Enap, but it exists on a daily basis. At Enap, everyone contributes equally as a team member.
- ☑ You can reach the top: your hard work pays off, you will be judged on your ideas, your dedication, and your talent, not for your chromosomes. A gender-

balanced industry is a better industry. Not just for women, but for all of us. So, you never have to give up on pursuing your dreams.

After you are being recognized as one of the Best 20 Chilean Women Executives in 2021, what is the significance of such honoring and what is your advice for women to reach leading positions?

The "Best 20 Chilean Executives Women in 2021" recognition was due to my contribution in the executive positions. For ENAP this is a very important recognition highlighting the important role of our executives inside the company and the impact in the countries where ENAP has operations. This recognition has taken place in Chile for the past 20 years, nominating the most important women in the country from different roles: executives, academics, businesswomen, public service, and social service, by choosing the most successful 20 women from every sector.

I can give the following pieces of advice for women that want to reach leading positions:

- ✓ Your learning trip never ends: you have to be always open to learning. Life always has something to teach us and we need to take the lessons learned from every situation and experience.
- ✓ Do not allow the voice of your fears be louder than the voice of your heart: Make sure the voice of your heart, your beliefs and the voice of your guts are always stronger than the voice of your fears.
- ✓ You never really lose until you stop trying: never give up on your dreams. You need to fight until the end. If you never try, you never know until what level you could reach.
- ✓ You get more by giving more: success does not result from how much you get but from how much you give. If you want an abundant life, give as much as you can. Use your high position to help others, not for helping yourself.
- ✓ Make sure that you really want to go that extra mile to become a leader: It takes hard work, time, tenacity, and sometimes trade-offs and compromises with personal life, but the reward will be always worthy.

On the occasion of Women in Energy Day, how does Enap Sipetrol take care of its women? Could you explain if you have any other activities to support women in the energy sector?

In ENAP, we strongly believe in Equal Employment Opportunity. For example, 30% of ENAP's Board of directors are women and 50% of its C-Level positions. Accordingly, ENAP has assumed the commitment to promote a culture of Diversity and Inclusion, rejecting discriminatory acts and favoring respectful treatment in all our operations. To that purpose, the entire organization has been supplied with a Policy on Gender Equality and Reconciliation of Work, Family, and Personal Life since 2018.

This regulation, which applies to all business units, aims to eliminate all types of discrimination between men and women, incorporate equal opportunities and gender equity in people management processes, facilitate reconciling work, family and personal life and promote measures to prevent, detect and punish gender-based violence.

Due to all of these initiatives regarding to Women's Empowerment, ENAP and ENAP Sipetrol have obtained several times the Impulsa Female Talent Award. The objective of this award, created in 2016, is to identify and highlight those companies that, in their field, promote women and the development of female talent. Among the reasons for the distinction obtained by ENAP, its Gender Equity and Family Life Reconciliation Policy stands out, as well as the leading role played by women on its Board of Directors and in senior management positions.

We are also promoting the incorporation of women in all our technical departments, since these areas have been mainly dominated by males.

"In ENAP, we strongly believe in Equal Employment Opportunity. For example, 30% of ENAP's Board of Directors are women and 50% of its C-Level positions. Accordingly, ENAP has assumed the commitment to promote a culture of Diversity and Inclusion, rejecting discriminatory acts and favoring respectful treatment in all our operations."

You are assigned as Enap Sipetrol' CEO in June 2021, what are your targets for your company in your new capacity?

The main target that I have is to fulfill our ENAP strategic plan by growing our branches in Egypt and Ecuador. The objective behind that is to guarantee a sustainable replacement of reserves with a significant cash generation. For that purpose, We are putting forth a lot of effort toward that end.. We already succeeded to be awarded West Amer block in the last EGPC bidding round, but we want to continue increasing our reserves in the country. In the same way, we are analyzing different opportunities to add new blocks in Ecuador.

Although growing our branches is an important target, maximizing our current assets is another key objective for all our ENAP Sipetrol operations. For that purpose, we are executing different plans that allow us to increase the value of our assets.

But for us, as ENAP, carry out our operation in a safety way complying all the environmental requirements is a must. We are just moving from a period where the focus was the COVID pandemic, when the main objective was to keep the health of our employees and contractors. In the same way, we cannot forget that we need to guarantee that they have to return home safely. In that regard, we continue strengthening all our safety and environmental standards in our operations.

And my other important target is to develop the people and talents inside the organization. By growing our branches, we will grow our people, and for that reason, we need to focus on developing their capabilities in a gender-balanced environment of opportunities.










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EXPLORING THE ROOTS OF GENDER INEQUALITY IN PETROLEUM SECTOR

An interview with **Abdelaziz Khlaifat**,

School of Sciences and Engineering (SSE) Professor & Associate Dean for Undergraduate Studies in the SSE, Petroleum and Energy Engineering, at The American University in Cairo (AUC).



Despite the continuous efforts by oil companies to recruit more women and make the workplace more hospitable for female employees, still more efforts are needed to bridge the gender gap in the sector. In an interview with EOG, Abdelaziz Khlaifat, Professor & Associate Dean for Undergraduate Studies in the SSE, Petroleum and Energy Engineering, at The American University in Cairo (AUC), offers an insightful analysis of the roots and the potential solutions for the persisting problem.

The petroleum sector has been trying to tackle the gender gap for years. Do you think the problem still persists today with the same momentum? Please explain.

Yes, the problem still exists. The share of the female workforce in the oil and gas sector globally does not exceed 25%. When it comes to the Middle East and Egypt, this share goes down to 10% and less. The petroleum industry is tackling the gender gap by recruiting more women but they are not staying for long due to personal and societal reasons.

What are the main causes behind this problem? Do you think gender gap starts from the academia? If yes, can you elaborate on that?

Well, I believe the oil and gas industry gender gap is driven by many factors including employability and culture. University students' specialization selection and declaration in Egypt and the Middle East is mostly decided by parents. The common belief is that working in the petroleum field is for men only. The American University in Cairo's Fact Book shows that the percentage of enrolled female students in petroleum engineering is 35% in the undergraduate program and 30% in graduate (MSc) program. These percentages are greater than the international petroleum industry women share (22%) in the workforce and Egyptian's oil and gas industry share of 10%. This means that the oil and gas gender gap passes through many gates starting from cultural issues (parent influence), then academia, then career obstacles including unfair evaluation for women capabilities to do the job with high level of competency.

How can the gender gap be addressed and properly tackled? And how should colleges and workplaces place a greater emphasis on equity and accessibility?

The gender gap issue in petroleum industry can be addressed by the so-called "reverse engineering". What do I mean by that? Oil and gas service and operating companies have to increase female share when it comes to employability and this requires government involvement for enforcement. We have one unprecedented example in the region where Abu Dhabi National Oil Company (ADNOC) had designated a specific oil field to be fully operated by women.

What are universities doing or should do to attract more calibers to STEM education? And how can student recruitment and retention be addressed?

It is so important to get students excited about STEM teaching and learning. Universities have to shift towards project-based learning, teamwork, innovative tasks, and technology to stir students' interest in a topic. This can include: relating science to students' daily lives to learn by exploration, employing hands-on experience and team activities, using realistic learning activities, and incorporating innovation and student decision-making into classroom lessons and activities.

Students' recruitment can be addressed by organizing open days where high school students can visit universities and tour their facilities to gain more understanding about what the university can offer. By doing this, students can weigh their options and select the right specialization and university. There are some other means of students recruitment including schools visits, emails, websites, etc.

Does the petroleum sector require certain specifications, qualifications, or capabilities? Furthermore, what do you recommend students to do to develop their skills to enter the market well-prepared?

The petroleum sector is developing at a very fast pace, meanwhile, it requires employees with strong IT, research, technical, problem solving, numerical, interpersonal, communication, and group working skills. Petroleum industry decisions involve multimillion dollars operations; hence the decision-makers have to have excellent engineering management skills and be accountable for their decision.

I would advise not only petroleum engineering students but also others engineering disciplines students to work on their hand-on experience and acquire professional certificates while they are doing their undergraduate studies.

What are the latest development and technological tools that facilitate petroleum engineering students' learning experiences?

The tools used in the oil industry are very sophisticated and can withstand extreme and harsh conditions such as high temperature and high pressure. Nowadays, universities are capitalizing on this and increasing their utilization of the so cold dry labs to educate petroleum engineering students using real field data to carry out exploration data analysis, reservoir modeling and simulation, oil field production optimization, drilling, cementing and blowout prevention operations and others. In addition to labs and hands-on experiences students learn how to use supercomputers to simulate all mentioned above processes to address challenges and explore opportunities via parameterization and carrying out different analyses.


What do you recommend professors in this endeavor to do in order to bring real-world experience into the classroom?

In order to bring the real-world experience into the classroom university professors have to use different and unconventional strategies such as: being up to date with the development in the oil and gas field; taking their classes on field trips where they listen from professionals; involving guest speakers in their classes to complement the covered material by real-world examples and case histories; problem-solving using the real reservoir and field data; and focusing more on modeling, simulating real-field scenarios and carrying out what-if-analysis.

What would you tell students to help them in shaping their future expectations of the sector?

Oil and gas are and will be our bread and butter for the decades to come. In addition to transportation, buildings heating, and power generation, petroleum products are the raw materials (feedstock) for the petrochemical industry that results in the production of plastics, solvents, polyurethane (plastic materials in different forms), and hundreds of other intermediate and end-user goods/applications used in our daily life.


Oil and gas production/business provides access to affordable energy, opportunities for decent employment of fresh graduates and professionals, business development opportunities, skills development arena, increased fiscal revenues for operating companies and countries, improved infrastructure in the country of production, and many more. Nowadays, we hear a lot about hydrogen cars and hydrogen production. Oil and gas production can foster hydrogen development projects.




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An Inclusive View on NATURAL GAS EXPLORATION & DRILLING ACTIVITIES

BY AMINA HUSSEIN, REHAM GAMAL & YOUSINA MOUNIR

EXPLORATION ACTIVITIES

1. SEISMIC SURVEYS & EXPLORATION AREAS

3D SEISMIC SURVEYS SUMMARY IN THE MED. SEA

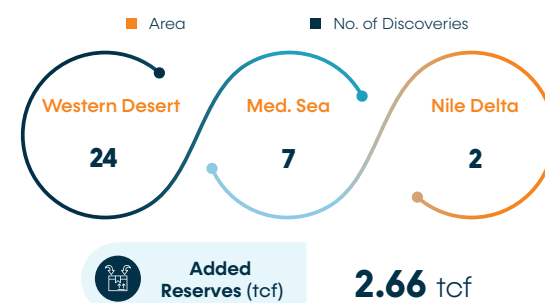
FY	Concessions	Surveyed Area (km ²)
2019/20	1	321
2020/21	9	33,532

MAIN AREAS OF EXPLORATION OVER FYS (2019/20-2020/21)

Company	Concession	Surveyed Area (km ²)
Dana Gas	N. El Arish	321
Exxon Mobil	N. Marakia	3,446.6
Chevron	N. El Dabaa	5,485.6
	N. Sidi Barrani	5,716.7
BP	N. El Sallum	3,472
Total	N. Ras Kanayis	4,316
Shell	N. El Fanar	3,568
	N. Sidi Gaber	2,583.7
	N. Cleopatra	2,422.2
	N. Marina	2,521

2. DISCOVERIES & ADDED RESERVES OVER FYS (2019/20-2020-21)

DISCOVERIES SUMMARY

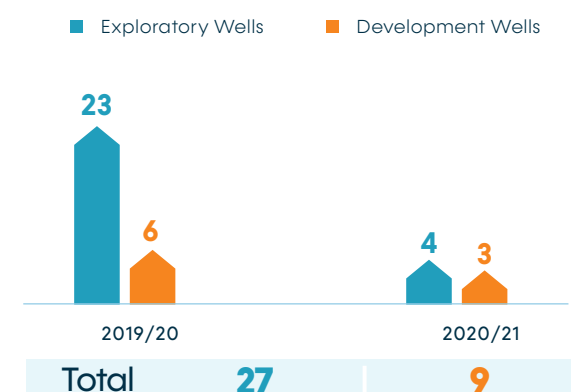


MAIN DISCOVERIES

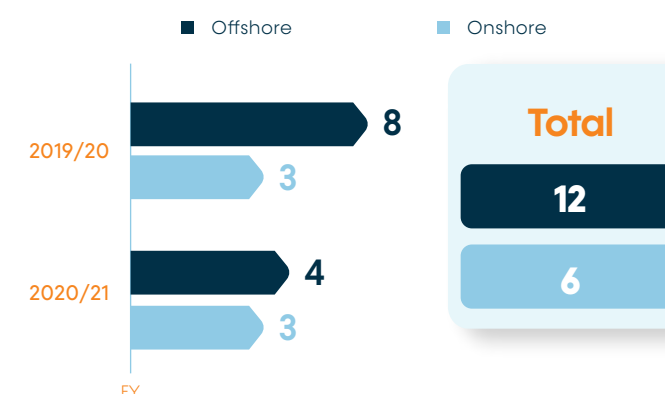
	Region	Concession	Added Reserves (bcf)
Atoll North -1ST2	Med. Sea	North El Tabya offshore	300
Bashrush-2 Dir Bis	Med. Sea	North El Hammad offshore	331
South Disouq-12	Nile Delta	South Disouq onshore	25
Ameeq -1	Eastern Med.	North Thekka	308

DRILLING ACTIVITIES

DRILLED WELLS

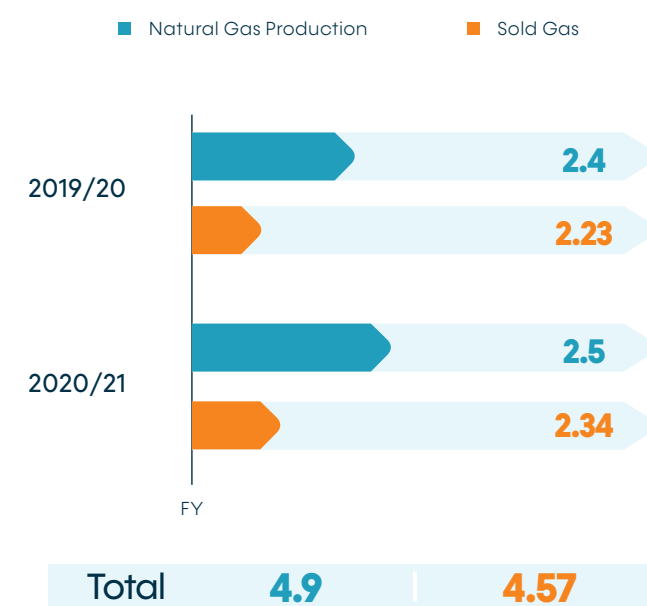


DRILLING RIGS



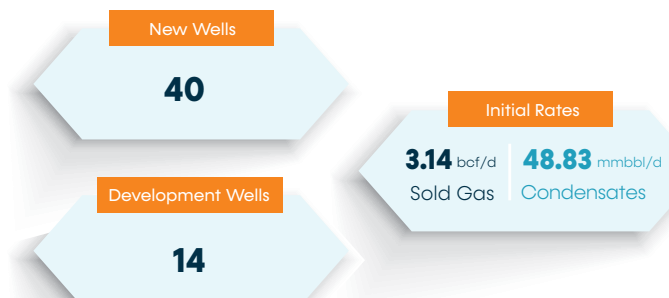
NATURAL GAS PRODUCTION

PRODUCTION RATES (tcf)



FIELDS DEVELOPMENT PROJECTS OVER FYS (2019/20-2020/21)

WELLS PUT ON PRODUCTION



DEVELOPMENT PROJECTS SUMMARY



MAJOR PROJECTS IN THE MED. SEA & NILE DELTA



EMPLOYING MORE WOMEN: THE REMEDY TO BRAIN DRAIN IN THE ENERGY SECTOR

BY RANA AL KADY

To begin with, some of highly trained and educated people prefer to migrate from developing and less industrialized nations to wealthy, more developed countries. This phenomenon otherwise known as the 'brain drain' suggests that individuals leave their countries for better opportunities elsewhere as there are few opportunities to use their talents or skills locally.

As a result, temporary migration allows employees to build physical assets, amass savings and assets, and, most crucially, learn new skills and experiences. Migrants represent an inflow of both human and financial resources when they rejoin their native nation. Enhanced productivity and knowledge dissemination might be a source of economic growth for the origin country if migrants repatriate. Usually, the brain drain phenomenon occurs with both men and women in the industry; however, there is a certain favorable investment in experienced and talented women – especially in recent years – as the brain drain phenomenon is less likely with women in organizations in this industry. The reasons behind women's tendency to stay longer at jobs and work multiple jobs in parallel will be discussed further in this article.

GENERAL OVERVIEW OF THE BRAIN DRAIN IN EGYPT

While brain drain does in fact occur in countries all over the world with women in the oil and gas industry, Egypt continues to promote the employment of women – not only in the oil and gas industry – but in all industries. The Egyptian oil and gas field has provided a win-win situation in which multiple programs and incentives are provided so that companies hire women while at the same time offering women benefits (i.e. work flexibility, soft skill development, etc.). As suggested by a Petrochemical Operations Manager who prefers anonymity, "Egypt is a place where people have deep roots. There are engineers working from outside Egypt and they are gaining experience in the industry that will allow them to build highly valuable technical and non-technical skills".

The gender disparity among employees is not uniformly distributed throughout industries, and it manifests itself in different ways in different professions. In general, men tend to lose more jobs than women during recessions. That's because occupations in cyclical industries like the oil and gas as well as the energy industry tend to employ more men than women, and they're usually the first to go when the economy tanks. However, to some extent, this proves that women in such industries are typically considered to be irreplaceable.

In fact, apart from industries, there is also another reason why women may be gaining ground: Women are somewhat more inclined to do two or more jobs than males. As found in a study conducted within the last 5 years, nearly 5.4% of working women and 4.6% of working men reported having multiple jobs. Women are much more likely than males to work part-time.


Furthermore, one main reason companies must concentrate on employing more women and encourage them to take on the managerial role is that women are far more likely than men to stay with a company. As per the poll, women's attrition rates are significantly lower than men's at all levels. The attrition rates for women at the entry-level, management, senior executive, and C-suite positions were 28%, 12%, 8%, and 4%, respectively. The percentages for men, on the other hand, for the same level job positions were 34%, 16%, 12%, and 8%, respectively.


It was found that organizations that focused on recognizing and investing in implementing best practices and policies tend to promote women's involvement. The important organizational environment includes having an emphasis on workforce profile, flexible hours, women's employment and retention, perks and work-life programs, maternity leave, organizational culture, and safety and wellbeing. These are just some of the many reasons why women are less susceptible to brain drain and are more reliable in such industries.

It should also be noted that the brain drain statistics for women are impacted by reasons unrelated to their experience or qualifications. For instance, while some studies have found that there is a high level of brain drain in women, this is due to higher education leaves, personal situations or even lack of women's rights in other countries. These situations prove that women in the industry could be well-qualified or have the relevant expertise, but due to other unrelated reasons, the brain drain calculations for women may be high for other insignificant or unrelated reasons.

To conclude, there is a significant cultural hurdle here; the oil and gas business is accustomed to getting expertise only from inside and is sometimes hesitant to break away from this practice where more women are hired instead. Businesses must persuade a substantially larger percentage of women to join, remain, and advance within their organizations. This is especially important in helping to reduce the pool of available and talented personnel.

Organizations that indirectly mitigate the brain drain implement policies, initiatives, and work cultures that clearly encourage women in the workplace, and witness improved participation, productivity, and loyalty as a result. These organizations highlight the benefits of concentrating on gender equality at work, as well as the critical elements. Women who work for such oil and gas organizations are more optimistic and are valued and appreciated by their employers when it comes to the workplace environment; and they believe their professions are advancing at the pace they would like.




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EGYPT JUMPS ON THE GREEN BOND BANDWAGON

BY MAI EL GHANDOUR

The burgeoning effects of climate change and the cost of extreme weather disasters grew by 86% between 2016 and 2017, according to the World Meteorological Organization. "There have been rising calls to promote a type of finance known as 'green finance' as a proactive method to fulfil SDGs connected to environmental sustainability as part of global efforts to transition to a sustainable low carbon economy," according to Prof. Nagwa Samak, Vice Dean of Post Graduate Studies and Research, Faculty of Economic and Political Science, Cairo University.

Green bonds are specifically destined for the funding or refunding of green projects, i.e. projects that are sustainable and socially responsible in areas such as renewable energy, energy efficiency, clean transportation or responsible waste management. However, to be eligible to issue those bonds, countries, companies or projects need to have a positive crediting rating, which is difficult for some countries in Africa, Divaldo Rezende, PhD, International expert in sustainable finance, climate change and carbon markets, told Egypt Oil & Gas.

As drivers of global climate financing, green bond issuance has surpassed \$350 billion in Q3 2021. According to Minister of Finance Mohamed Maait, Egypt's economic growth is attributed to sustainable investments. "In fact, green investments have reached around 30% of this year's budget," he said during The Egypt Petroleum Show (EGYPS 2022).

Egypt was the first to issue green bonds in Africa and the Middle East, where in September 2020, the Ministry of Finance (MoF) successfully issued the first sovereign green bond in Africa and MENA region for \$750 million for 5-year maturity, which places Egypt on the map of sustainable financing, the Minister explained.

According to the Finance Minister, "In November 2021, the MoF made publicly available its first annual allocation and environmental impact report for the 15 national green projects that were financed through the proceeds of the green bonds. Of the total bond proceeds, 46% were allocated to green transportation projects and 54% to sustainable water and desalination management projects."

In line with the MoF's goals to diversify its resources, the Ministry issued its first green loan for an amount of \$1.5 billion from a group of international and commercial banks, the minister further noted, adding that the issuance of the loan was met with a high level of demand.

INTERNATIONAL RECOGNITION

The international expert in sustainable finance, climate change and carbon markets, told Egypt Oil & Gas, "Corporations are not the only ones pioneering sustainable debt – a growing number of governments are issuing their own debt instruments with a sustainable label, meaning that the money raised will be earmarked to go into environmental or social projects."

"What we see in the market is that more investors in debt markets are demanding dual social and green benefits, and more investors are demanding customized sustainability options. The markets are responding, with new products emerging such as green loans, green commercial paper and sustainability-linked loans. This helped to make 2021 the seventh consecutive year of record issuance in sustainable finance since the green bond market began," Rezende said.

"New policies to scale sustainable finance proliferated in 2018, as governments vied to become international hubs for these investment products. In the year, Hong Kong and Japan established programs to incentivize market growth, while developing countries could follow the same path," Rezende said.

FRA GREEN BOND GUIDELINES AND FRAMEWORK

In July 2018, the Chairman of Egypt's Financial Board Regulatory Authority announced approval to establish an article to regulate the issuance of Green Bonds and contribute to eco-friendly projects. Following the announcement, the Egyptian government established a Green Financing Framework, which will enable Egypt to finance existing and future eligible green projects.

"The sovereign green bond program will help us raise capital from investors who care for both environmental and financial returns," said Finance Minister Maait. "The issuance of international government green bonds in the global markets will enhance the environmental rating of Egypt in addition to increasing the confidence of foreign investors in the Egyptian economy and supporting its current and future growth levels."



According to the Green Financing Framework, which is in accordance with the 2018 ICMA Green Bond Principles¹⁰, and under which Egypt can issue Green Bond(s) or Sukuk(s), any amount equal to the net proceeds of any green bond/ Sukuk issued by the Egypt will be allocated to finance new or re-finance existing projects/expenditures, in part or in full. Eligible expenditures will include any of which contributes to Egypt's climate change mitigation and adaptation policies. In addition, eligible green projects will exclude any state disbursements to a local agency or local authority that participates in capital markets.

For each Green Bond/Sukuk issued, Egypt asserts that it will not use the proceeds for: Burning of fossil fuels for power generation and transportation; Rail infrastructure dedicated for the transportation of fossil fuels; Nuclear power generation; Alcohol, weapons, tobacco, gaming, or palm oil industries; Renewable energy projects generating energy from biomass using feedstock originating from protected areas; Waste incineration activities: waste to energy facilities that incinerate recyclable or reusable materials or that divert waste from other usage; Landfill projects.

ROLE OF PRIVATE SECTOR

"Green finance is not the responsibility of one entity, yet it depends on collective action from various players, so it is a multi-layered process that involves banks, institutional investors, and international financial institutions, companies, production facilities, or even governmental authorities," according to Vice Dean Samak.

Meanwhile, the sustainable finance, climate change and carbon markets expert Rezende explained "green bond issuance should be associated with other mechanisms like climate finance and sustainable finance. Climate finance from public sources of funding require that the project's sponsor mobilize funding from other sources, including the private sector."

"The private sector is key to mobilizing green investment and sustainable development, 75% of the investment is expected to come from the private sector to complement public sector financing. This calls for innovative approaches to attract and steer financial flows consistent with a pathway towards Green Bonds and climate resilient development. Climate Change Presents a \$5 trillion investment opportunity in Africa by 2030," Rezende added.



FUGRO KOBI RUEGG MULTI-PURPOSE SURVEY VESSEL

Kobi Ruegg is a multipurpose, 59 metre, DP1 survey vessel with a small carbon footprint. Based in Abu Qir Port, Egypt, it can be easily deployed to the Mediterranean, the Black Sea and the Red Sea.

VERSATILE AND QUICKLY MOBILISED

Kobi Ruegg is a highly versatile vessel that can be mobilised quickly and easily, reducing overall project timescales. It is ideal for geotechnical surveys, 2D seismic surveys, high-resolution geophysical surveys and seafloor mapping activities. It can be deployed on engineering projects ranging from offshore drilling sites and wind farms, to as-built pipelines. Its surveys are also used to identify geohazards, detect seep, plan cable routes and more.

INNOVATIVE REMOTE SOLUTIONS

The vessel is equipped to provide remote solutions, enabling land-based Client Representatives to make swift decisions based on the same near real-time, high-quality information as their onboard

colleagues. Solutions include the 24/7 Remote Client Support service and real-time video broadcasting. Remotely operated autonomous underwater vehicle (AUV) can also be provided for survey activities.

ONBOARD SURVEY EQUIPMENT

The vessel comes with a high-precision acoustic positioning (HiPAP) and long-range transducer, plus a Fugro Starfix survey-grade global navigation satellite system (GNSS) and L-Band combined receiver for tracking which includes GPS, GLONASS, Galileo and BeiDou. Its dual stern A-frames facilitate fast, efficient surveys, as do its gondola-mounted sensors, which also eliminate surface noise. Its multibeam sensors are suitable for shallow and deep-water surveys and sub-bottom profilers are also available.

BENEFITS

- Provides accurate, long-range dynamic positioning
- Can perform a variety of surveys
- Survey operations can be mobilised quickly and easily, reducing project timescales
- Low fuel consumption makes it cost-efficient, with a small carbon footprint
- Remote operations reduce HSE risks and increase project efficiency and flow
- Compatible with a wide range of geotechnical systems

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THE IMPACT OF MANUFACTURING EXECUTION SYSTEMS (MES) IN OIL & GAS OPERATIONS

BY RANA AL KADY

Manufacturing Execution Systems (MES) incorporate manufacturing facilities, operational technologies such as supervisory control and data acquisition (SCADA), and computing systems. Engineers seek methods to monitor and regulate the ongoing operating processes in oil and gas equipment manufacture since the operations are complicated. With actual, precise, and accessible data, MES delivers information for optimizing operations. Users may significantly influence the bottom line by making timely, educated choices regarding production efficiency with a greater understanding of how their facilities are functioning in real-time. For the oil and gas business, MES provides intelligent design for industrial systems with integrated control.

MANUFACTURING EXECUTION SYSTEMS (MES) OVERVIEW

First of all, with the exception of Distributed Control Systems (DCS) display data, field flowmeters and electric meters in distribution facilities are spread on the scene in field production planning. Manual data copying and transfer is inconvenient day after day, and it is simple to create data variation throughout the transmission process. Various on-site reports continue to rely on manual statistics, which are characterized by a high workload, backward methods, a huge amount of work time, ambiguous job tasks, and difficulty in ensuring correctness. Simultaneously, corporate data is held in a scattered, closed, and non-standard manner. The structure isn't consistent; therefore, data collection is tough.

ADVANTAGES AND DISADVANTAGES

MES implementations, like any other software implementation, offer advantages and disadvantages. Companies would have an MES for their work floor if there were no hazards. It's critical to compare and contrast the dangers and rewards.

First of all, in terms of advantages for the application of MES, it is important to note that the software aids its users to monitor costs in an effective way. All vital data on the

manufacturing floor may be tracked with MES software. This covers things like labor, supplies, scrap, downtime, and tools, among other things. All of these variables are updated in real-time, allowing for accurate cost records and forecasts. Secondly, MES software help to increase uptime. To elaborate, the program will analyze your calendar to detect where there are gaps and will plan maintenance without the need for user interaction. If you arrange maintenance before the machinery shuts down as well as when there is downtime, you will extend the time the equipment is operational. Additionally, not being able to organize your inventory and other products clearly might result in a lot of unnecessary effort. Users might be able to discover where you're spending a fortune on needless things and staff using an MES. Finally, quality control is necessary. It might take hours to acquire quality control input without an MES. Countless more things may have been manufactured in that period, all of which would have to be discarded as junk. Quality control information is provided in real-time with a MES, so as soon as a situation occurs, production is halted so employees may rectify the problem and get the machines back up and running as swiftly as possible with the least amount of waste as feasible.

Despite these promising benefits of implementing MES software in the oil and gas sector, there remain to be some disadvantages that companies must consider. For example,

the program does not always perform as expected. The majority of the time, this is due to inefficient implementation methods. This might be due to a lack of equipment, a lack of training, or something else entirely. Additionally, embracing new technologies isn't always fun or easy for employees. Companies would need the majority of your team to accept the company's adjustments; with that, it is important to communicate properly with your employees so that everyone is aware of current events and what they must do to keep informed. Consequently, companies may suggest adjustments to the original scope of the project over the course of the project. Any time the project scope is altered, the duration and expense of the project may change.

To conclude, to optimize production and maximize economic potential, data must be transformed into relevant business knowledge. The modern refinery industry must be more adaptable and sensitive to market swings. Planning, organization, operation, and the capacity to adjust to change quickly are all essential aspects of successful performance management. The history of manufacturing execution systems (MES) is significant because it illustrates how MES software technology enables refiners to swiftly transform data into profit through more effective data management, faster production performance, and improved operational efficiency.



WOMEN INCLUSION IN OIL & GAS SECTOR : GOING BEYOND DIVERSITY

BY SAMAR SAMIR

Pursuing a career in the oil and gas industry might seem challenging to women. The industry is known as male-dominated because of the weak representation of women, who also might find it difficult to get promoted as they were subject to the social paradigms that limit women to their role as caretakers of households and unable to be flexible with the work conditions of the sector. However, today, many cases proved that women are up to the challenging circumstances of the energy industries as their inclusion brings benefit to the institutions, they are part of.

Gender Gap

The gender gap in the oil and gas sector is not a novel subject. The representation of women in the industry is rather weak and is a phenomenon of the industry worldwide. Women only represent 22% of the employees in the oil and gas industry worldwide. The widest gender gap across the globe is the MENA region.

In Egypt, the representation of women in the industry is not in any way different. According to the Ministry of Petroleum and Mineral Resources, women represent 30% of the workforce in the Egyptian General Petroleum Corporation and the holding companies.

Accordingly, the international companies and the national companies adopt Egypt's vision 2030 that aspires for inclusion and equality in the workplace. With the challenges faced by the industry, encouraging and enabling equality, diversity and inclusion became a business priority.

Benefits of women Inclusion

Why should companies invest in including women in the workplace? According to a Women Human Rights report under the title 'Promoting Gender Diversity and Inclusion in the Oil, Gas and Mining Extractive Industries', female inclusion promises better performance, a bigger pool of talents, and increased profitability. Companies with more women employees have better communications and are more able to solve technical problems. Research shows that diverse teams outperform non-diverse teams by 35%.

Women approach information with different lenses than men which makes them more sensitive to details. Subsequently, this increases the team's innovation. Additionally, gender-diverse boards of directors have better managing strategies and better execution of them. They are more likely to apply gender equality in the workplace. They enhance operational metrics including capability, leadership, motivation, coordination and control, innovation, and work environment which results in higher operating margins.

Studies revealed that companies with female directors in their boards have higher profit margins. This is reflected in the top 100 companies in the mining industry as they all have female directors and women in their boards as reported by The Advocates for Human Rights Minneapolis. The inclusion of women also develops sales revenues and share price. It has been found that companies with women in senior management "outperformed those with no women by 41% in terms of return on equity (22 % vs. 15 %), and by 56% in terms of operating results (17 % vs. 11 %)."

The aging petroleum workforce is another obstacle that can be stepped by empowering women and human capital. Depending on qualified women can help having new blood in the industry. Encouraging women to join the industry by setting good examples of successful female leaders in the field can increase and maintain individual talents. Needless to say that diverse teams lead to better customer experience. As women represent around 50% of any society, they bring a diverse understanding of customers' needs and diverse techniques of approaching processes.

Egypt's Equality, Diversity, and Inclusion vision

Based on the previous reasons, it's worth for governments and different entities to invest in women inclusion in workplaces.

In alignment with the UN sustainability vision, the Egyptian oil and gas sector is taking steps towards a more inclusive work environment. Minister of Petroleum and Mineral Resources, Tarek El Molla, said in the 'She is Energy' webinar that "the role of women and their empowerment is an integral part of Egypt's 2030 vision." The Egyptian sustainability vision triggers economic and social justice in all fields. So, on an institutionalized level, several initiatives are at work to achieve equality and diversity in the sector's companies.

Since 2017, women have had a dedicated day in the biggest petroleum conference in the region, the Egypt Petroleum Show (EGYPS). The day is mainly dedicated to raising awareness and promoting action to eliminate difficulties women may face in the sector. This consensus among the oil and gas industry's leaders assures



women that they are going to find equal opportunities and treatment. Furthermore, effort in this regard is being awarded in the Global Equality in Energy Awards Ceremony, and this year to further encourage diversity, an award for employer of the year championing inclusion, diversity and equality is added. This celebration of prominent female leaders aims to set role models for all the women who are seeking a job in oil and gas sector.

In order to put the conference results into action, the Ministry has established the equal opportunity unit. The unit reflects the cooperation between the Ministry of Petroleum and Mineral Resources and the National Council for Women. This unit aims at improving the role of women and empowering them economically, socially and politically. It creates the necessary rules and training programs needed to ensure equal opportunities between genders.

The equal opportunity unit is not the only initiative concerned with improving women's abilities and skills to keep pace with the work needs. Women represent 40% of the modernization project. The project's seven pillars seek innovating and reforming Egypt's the oil and gas sector.

Efforts to achieve equality, diversity and inclusion are not only undertaken by national companies and the petroleum ministry in Egypt, International companies also participate in creating equal opportunities for both genders.

Wintershall Dea for example has its own inclusion target by 2025. The company's plan is to increase female C-suite employees to be 30%. They are building a working environment where women feel equal, welcome to work, and have the same opportunities as their male colleagues.

Shell, meanwhile, approaches diversity and equality in its workplace through its graduate program. It is concerned with cultivating talented graduates and giving them the needed skills to work. The program offers equal starting point to males and females stressing diversity and inclusion regardless of gender.

When it comes to promoting women to leading positions, women still lag behind due to the belief that women are less flexible to working conditions. According to Katharina Rick and Iván Martén in 'Gender balance in oil and gas report', "among women who are still working in the industry after 15-20 years, most have a less than 20% chance to land a Senior Executive job." This misconception that women do not have the needed critical experience or the connections to be in leading positions can be defused by training programs that prepare women and men for the roles they will be filling.

The representation of women in oil and gas industry has increased in the past few years. The Egyptian oil and gas sector has been trying to eliminate discrimination and cultivate the skills of female employees to cope with the vision of diversity, equality, and inclusion and the belief that inclusion of women in a diverse environment helps in developing businesses as well as society.



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YEMEN WAR SPILLOVER IN OIL AND GAS DYNAMICS

BY SAMAR SAMIR

The war in Yemen outbreak seven years ago raising questions on the region's future oil and gas industry especially with the involvements of the region's biggest oil-producing powers; Saudi Arabia, United Arab Emirates (UAE), and Iran. The tension between the Houthis rebels and the internationally recognized government of President Abed Rabbo Mansour Hadi started in 2014 has led to the collapse of the ruling regime and the beginning of the war that devastated the lives of millions of Yemenis. The conflict has even expanded to affect oil fields in Saudi Arabia and UAE and threaten the stability of oil and gas markets.

HOW IT ALL BEGAN

The conflict that has caused 233,000 deaths, as reported by the BBC, has appeared after the former President Ali Abdullah Saleh handed over power to his deputy Abdrabbuh Mansour Hadi in 2011. With the instability in the country, the Houthis, formally known as Ansar Allah, seized control of Saada province and marched southwards. In 2015, the Houthi rebels took over the capital Sanaa forcing the president to flee the country.

The Houthis are a Zaydi Shiite Muslim minority movement that is supported by Iran. Yemen, which lies on the southern end of the Arabian Peninsula, shares its northern border with Saudi Arabia. The threat of insecure borders along with the risk of raising Iran's influence in the region has led Saudi-Arabia to form an alliance with UAE and seven Arab countries. They have led airstrikes to support Hadi's government.

Moreover, Yemen also overlooks Bab el-Mandeb Strait which connects the Gulf of Aden to the Red Sea and western Saudi Arabia. The presence of such a conflict and an increasing Iranian influence near this focal area is also posing a threat to the strategic oil and gas route to the Suez Canal. The possible control of the Houthis and, subsequently, Iran over that advantageous strait drove Saudi-Arabia and UAE to interfere to secure their oil and gas trade.

The Saudi coalition accused Iran of supporting the Houthis with ballistic missiles and other sophisticated weapons which Iran has denied any knowledge of. The troops of Saudi Arabia and UAE helped the Yemeni government to work from Aden. The alliance continued to support Hadi's government until UAE backed its troops in 2019. However, the UAE government is still involved in this war by training the Yemeni troops. Saudi Arabia still helps the government in Yemen to secure its own borders.

THE EFFECTS ON OIL AND GAS

As oil and gas industry is the backbone of the involved countries' economies. Oil and gas reserves and infrastructure were the favored targets for Houthis.

Yemen meanwhile has 3 billion barrels of oil reserves and 17 trillion cubic feet of natural gas which are not developed due to the war. The Houthi forces also struggled to maintain power over Marib, the oil-rich province.

THE EFFECTS OF THE CONFLICT ON SAUDI-ARABIA

As Saudi Arabia is the largest exporter of crude oil and pumps around 10% of the petroleum consumed globally, the Houthis opted to strike the kingdom's most valuable asset. The Washington-based think tank Center for Strategic and International Studies announced that "Houthi attacks upon Saudi Arabia more than doubled for the first nine months of 2021 compared to the same period a year earlier." Although not all of these attacks are on oil infrastructure, and not all of them have the exact precision, they can affect oil prices. In fact, the international benchmark Brent jumped by more than 60% over the last year and such attacks can be even more disturbing to oil markets.

In May 2019, the Houthis attacked the Saudi Aramco pipeline which caused a temporary price spike of around \$2 per barrel. Similarly, the Houthis' attack on Saudi Arabia's Abqaiq and Khurais oil processing plants was responsible for the rise of the Brent 13% to be \$68 per barrel which returned to \$60 a barrel a few days after the attack. The militants' drone attack on the East-west pipeline, which links Saudi oil fields and the Red sea shipping terminals, caused it to stop working for 10 days.

The Houthis' missile and drone attacks on Saudi oil infrastructure continued after these incidents. The militants attacked ports including Jeddah and Al-Shuqaiq, population centers, Red Sea shipping lanes, and Saudi Aramco facilities in Jeddah. Despite the peace talks, the Houthis are still attacking Saudi cities and strategic infrastructure.

THE EFFECTS OF THE CONFLICT ON UAE

On a parallel line, the Houthis have also launched missile and drone attacks on UAE, the third-largest oil-producing member of OPEC and the world's seventh-biggest oil producer. So, disrupting its oil supplies can cause oil price spike. The first attack on the Abu Dhabi National Oil Company (ADNOC) in January 2022 has killed three people and renewed the UAE's involvement in the Yemeni war. According to CNBC, the "international benchmark Brent crude futures advanced 1.19% to \$87.51 per barrel, while U.S. West Texas Intermediate futures settled 2.43% higher at \$85.43 per barrel." The prices hit the highest level since 2014. This price spike reflected the tension over having a war in the Middle East besides the potential conflict between Russia and Ukraine.

The UAE has withdrawn its troops from Yemen in 2019, however, the UAE helped recapture territory seized by the Houthis in the central Yemeni province of Shabwa, which infused the Houthis missile attacks. One of these attacks set off explosions in fuel tanker trucks. The UAE government announced that they are going to retaliate. The Ministry of Foreign affairs condemned the attack adding that UAE "reserves the right to respond to these terrorist attacks and criminal escalation."

This might add fuel to the fire, adding more tension to the region and dragging UAE into a war with the Houthis and, hence, Iran can disturb the energy market for a long time.

Nonetheless, the Houthis have stricken three more missile attacks on UAE that were intercepted. The attacks have been followed by airstrikes on important targets in Yemen. The Houthis also seized an Emirati ship in the Red Sea. They claimed the ship carried weapons. The coalition announced that the ship carried medical equipment and threatened to attack Houthi-held ports if they don't release the ship. Based on the latest events, till the date of publishing this article, the ongoing strikes from both sides do not promise any peace settlements soon.

The long seven years conflict in Yemen has till now caused human, political, and economic loss to the country and to the involved parties. The Houthi's attacks on oil plants and infrastructure are threatening the global economic recovery. They are meant to stop the Saudi coalition, however, they are also affecting oil and gas prices worldwide. With a prospect war in Europe, experts hope a settlement to the Yemeni situation will be found soon.

WE MUST KEEP ON PROTECTING EACH OTHER

EGYPT
OIL & GAS
—COMMITTEE—
HSE TASK FORCE

3 FACTORS TO HELP YOU MAKE SAFER CHOICES

WHEN YOU'RE IN
AN AREA OF
WIDESPREAD
COVID-19
TRANSMISSION



EVEN AFTER GETTING VACCINATED, WHY IS IT IMPORTANT TO



Wear mask



Practice
social distance



Clean objects
& surfaces



Wash hands
with soap



EGYPS 2022 DRAWS ROADMAP FOR AFRICA'S ENERGY TRANSITION

During his inauguration of the fifth edition of the Egypt Petroleum Show (EGYPS 2022), Egyptian President Abdel Fatah Al Sisi urged developed countries to provide economic support for Africa's energy transition and to extend the transitional period for the achievement of its renewable energy objectives.

Al Sisi pointed out that Africa is running behind in its energy transition due to historical reasons. "The cost of fulfilling renewable energy commitments to address climate change is substantial. African countries [cannot afford such a cost]." He called for the decisions of the next UN Conference of Parties on Climate Change (COP27) not only to be reasonable and measurable but also to be fair.

EGYPS started on February 14th, taking place over three days at Egypt's Al Manara International Exhibition Center, under the patronage of the Egyptian President. The fifth edition of the Show is held under the theme "North Africa and the Mediterranean: Delivering Energy Today".

The Egyptian Minister of Petroleum and Mineral Resources Tarek El Molla highlighted the importance of cooperation between African countries to achieve their energy goals, stating that "the aspiration of our people must lead us all to join hands to realize their legitimate hopes for economic progress and development."

AFRICA'S ENERGY TRANSITION & THE FUTURE

In a keynote address by Fatih Birol, Executive Director of the International Energy Agency (IEA), Birol referred to the worldwide recognition of Egypt as an important energy player. He delivered what he described as "good news" saying that "in the light of the developments in Egypt, and following the Egyptian government request, I look forward to welcoming Egypt joining the International Energy Agency's family as an associate member."

He tackled how climate change affects Africa, pointing out that the whole continent produces "only 2% of the global emissions causing climate change."

"Today in Sub-Saharan Africa, only a bit more than 40% of the people, not even half of the people have access to electricity," Birol stated, explaining that over "900 million [people] in Africa use premature ways of cooking." This leads to around 500,000 premature deaths annually, especially among women, due to the emissions produced through the use of premature fuels, such as coal, wood, and undeveloped biomass.

In his speech during the opening, El Molla praised the success of EGYPS' previous editions, pointing out that EGYPS has made its mark as an important date on the international energy calendar. He also highlighted some of the milestones achieved by the oil and gas sector in the past years, referring to its contribution to the Haya Karima ('Decent Life') initiative to ensure sustainable development.

The EGYPS 2022 opening witnessed a Ministerial and Policy Panel Discussion, which was moderated by Former Emerging Markets Editor at CNN and Professor of Business at NYU Abu Dhabi John Defferios. The distinguished panelists included El Molla; Amani Abou-Zeid, Commissioner of Infrastructure, Energy, ICT and Tourism at the African Union Commission; Aissatou Sophie Gladima, Senegal's Minister of Petroleum and Energies; Gabriel Mbaga Obiang Lima, Minister of Mines and Hydrocarbons at the Republic of Equatorial Guinea; and Chief Timipre Sylva, Nigeria's Minister of State for Petroleum Resources.

The panel tackled the topic of climate change and energy transition from an African perspective. During the panel, El Molla explained the huge contrast among the 54 African countries as some do not have the ability to effectively exploit their resources, while some lack the infrastructure required for energy transition. Therefore, the minister stressed the importance of unifying efforts with regards to the energy transition in order for Africa to have a voice at the upcoming UN Climate Change Conference 2022 (COP27).

Abou-Zeid noted that "17 countries in Africa produce natural gas. 70% of the African petroleum is exported and not benefited from in local transformative articles or energy generation. 45% of natural gas in the continent is exported."

Lima agreed that there will be difficulties in pushing Africa to cut down on its use and production of petroleum and natural gas, pointing out that "Africa needs to have our own green plan, not the European green plan."

Commenting on the energy prices crisis, Chief Sylva said that "the main issue [is] the rate at which they are taking out investments in the oil sector was too fast and the development of renewables to fill that gap was also too slow."

The panel further talked about having African funding to help in energy development. Abou-Zeid said that "last June we were able to launch the African Market, which by 2040 will be the biggest global market for exchanging energy and connecting producing and demand areas through huge networks," adding that this project was supervised by Egypt and the African Ministerial Committee.

Abou-Zeid also praised the Haya Karima initiative as it works on the three priorities required to develop the African Continent, which are water, energy, and digitalization.

During his opening speech, dmg events CEO Christopher Hudson expressed his delight that the event was "graced by the presence of the president of the Republic of Egypt, H.E. Abdel Fattah Al Sisi, highlighting not just the importance of the next three days for the energy sector not only for North Africa and the Mediterranean region, but its importance to the global energy sector and the role that Egypt plays in that sector."

EGYPS 2022: A CLOSER LOOK

EGYPS 2022 witnessed the participation of over 450 international and regional exhibiting firms. The exhibition this year featured 25 international oil companies (IOCs), national oil companies (NOCs), and integrated energy companies (IECs), which reflects the growing confidence in Egypt and its significant role in the region. The exhibition also features seven foreign country pavilions displaying innovative technologies and industry solutions.

"The Egypt Petroleum show has become and grown to become a significant annual gathering of energy industry, which connects the international community with speakers, exhibitors, and attendees from over 60 countries this week," Hudson noted.

The conference witnessed the participation of 11 petroleum and energy ministers from different countries, 19 heads of major international oil and energy companies, and eight leaders of major international petroleum organizations, led by Organization of the Petroleum Exporting Countries (OPEC), the International Energy Agency (IEA), the Eastern Mediterranean Gas Forum (EMGF), Organization of Arab Petroleum Exporting Countries (OAPEC), African Petroleum Producers' Organization (APPO), the Union for the Mediterranean, the Mediterranean Energy Observatory, and the World Energy Forum.

In all of its editions, EGYPS has enjoyed remarkable success in bringing energy leaders together and standing out as one of the most prominent oil and gas events in the Mediterranean region and North Africa. As Egypt has been confirmed to host the United Nations Climate Change Conference (COP27), this year's edition comes at a critical time to help convene the industry's transition.

A SUMMIT FOR FINANCE AND INVESTMENT EGYPS 2022: CONNECTING FINANCIAL AND ECONOMIC POLICIES TO THE FUTURE OF THE ENERGY SECTOR

The second edition of the EGYPS Finance & Investment Summit, which took place on the second day of the conference, convened a galaxy of global finance and energy leaders who thoroughly debated the future of governance, investment, and cost management models for the energy value chain whilst paving the way for a global decarbonized economy.



And as multinational companies begin venturing into untapped markets to safeguard their continuity, the EGYPS Finance & Investment Summit served as a perfect venue for investment leaders to share experiences and how they are revisiting their business models and investment strategies whilst complying with evolving economic scenarios that ensure their business survival.

REACTIVATING GLOBAL ECONOMIES THROUGH PIONEERING FISCAL POLICIES

During a ministerial keynote speech, Minister of Finance Mohamed Maait showcased how governments and global financial entities have been crucial in helping the world recover from the recent economic turmoil, with Egypt being the basis for his argument. Maait highlighted the crucial role of government bodies, particularly the Ministry of Finance, in realigning fiscal responsibilities to address the immediate priorities through various stimulus packages.

Maait maintained that economic and sustainable growth will continue to be the main priority of the Egyptian government and the Ministry of Finance. "Egypt has consistent growth over the years, recording a 5.3% and 5.6% in 2017, 2018, 2019 and then dropped during the pandemic to 3.3% in 2019/20. Such levels are still important given the global slowdown and the challenges faced as a result of covid," he said.

"As for our growth projections, we target a growth rate of more than 5.7% in this financial year of 2021/2022. In 2022/2023, we project that we will also grow by about 5.7%, putting us back at pre-covid growth rate levels," Maait added, attributing this economic growth to sustainable investments, "In fact, green investments have reached around 30% of this year's budget."

Egypt was the first to issue green bonds in Africa and the Middle East, where in September 2020, the Ministry of Finance successfully issued the first sovereign green bonds in Africa and the MENA region for \$750 million, the minister explained. It is important to shed light on the important projects funded by the green bond and its contributions to improving the Egyptians' lives, he further stressed.

According to the finance minister, "in November 2021, the MoF made publicly available its first annual allocation and environmental impact report for the 15 national green projects that were financed through the proceeds of the green bonds. Of the total bond proceeds, 46% were allocated to green transportation projects and 54% to sustainable water and desalination management projects."

In line with the MoF's goals to diversify its resources, the ministry issued its first green loan for an amount of \$1.5 billion from a group of international and commercial banks, the minister further noted, adding that the issuance of the loan was met by high demand. "I confirm Egypt's continuous commitment towards sustainable development in partnership with the private sector and the ministry," the minister concluded in his speech.

SUPPORTING ENERGY FINANCING

In line with climate goals, speakers in a panel, which was entitled "Bolstering international partnerships to boost energy investments and support project financing", attempted to present a full picture of the climate dilemma, the point of view of oil and gas supermajors and the point of view of those ready to finance institutions' climate goals.

Understanding the significance of novel partnership and investment models in the energy value chain, David Chi, Regional Vice President and General Manager Apache, said that there is a lot of conversation about climate change, but in order to really have an effective approach, we do not have to curb energy, pointing that there is a growing need for clean, reliable, and affordable energy.

Sameh Sabry, Senior Vice President and Managing Director – Egypt, Wintershall Dea, talked about his company's commitment to the energy transition and achieving net zero by 2030. "This commitment is in line with our position as the leading independent oil and gas company. Nevertheless, to achieve that, this will require a lot of effort," Sabry said.

For the CEO of HSBC Egypt Todd Wilcox, the energy transition does not – and should not – happen overnight; on the contrary, it should take its time.

FORWARD-LOOKING FINANCIAL STRATEGIES FOR THE ENERGY INDUSTRY

Another key session under the title "Forward-looking financial strategies for the energy industry" convened finance leaders to sketch out the futuristic finance and investment strategies to maintain cash flow and business continuity and sustainability during price falls and economic volatility.

Maria Martin, Head of Corporate Finance at Energean, said "it is a really exciting time to be part of things... we need to be adapting," adding that "we should look at gas as a transition."

James Smith, CFO Capricorn Energy insisted that "the question that is missing from the debate who's paying for that transition," but then goes on saying, "I think we will see capital coming from different parts of the world." On the other hand, Mohamed Mostafa, Head of Finance PICO Cheiron recommended that the process to convert to green economy should not be fast-tracked, and hence, rushed.

ADVANCING DIGITAL INVESTMENTS IN THE ENERGY INDUSTRY

The weak demand for commodities during the pandemic has heightened the importance of investing in digital technologies. This discussion during a session, under the title "Advancing digital investments in the energy industry for cost efficiency and resource optimization", focused on the significance of digital investments in the energy industry to break operational silos, protect critical assets from cyber-attacks, and ensure a consistent return on investments in the long run whilst paving the way for a net zero economy.

"Some say the pandemic is the shining armor of digitization," Karim Badawi, Managing Director - Egypt and East Mediterranean Schlumberger said, further explaining that the last two years have been instrumental, hammering on the power of human connection, digital enablement, modernization. "The Egyptian Upstream Gateway (EUG) came in the perfect time, while Egypt's first digital bid round came in the middle of the pandemic," he pointed out

"I would love to start just before the pandemic [when] H.E Minister of Petroleum and Mineral Resources Tarek El Molla was actually the executive responsible for the digitization of the sector," Hoda Mansour, SAP Head of Business Process Intelligence EMEA South SAP said, adding that this why he had a very clear vision when it comes to digitization. "So, we proceeded full force, full speed, with a very clear vision," she emphasized, adding "I think this also reflects the resilience that is coming from Egypt and the growth that Egypt witnessed in the pandemic."

The summit comprised panels titled two other panels under the titles "Unlocking energy markets of the future; Supporting energy sector stability" and "Accelerating sustainable investments."

GLOBAL FINANCE & INVESTMENT AWARDS CEREMONY

Fully supported by and in alignment with the objectives of the Egyptian Ministry of Petroleum and Mineral Resources, the Global Finance and Investment Awards recognized the achievements of senior finance leaders and organizations in the global energy space for their contributions to the industry.

The winners and highly-commended of both categories were awarded in a ceremony during the Financial Investment Summit. The Global Finance Leader of the Year Award, which recognizes outstanding global finance leaders for their contributions to the growth and profitability of their businesses was shared by Sherine Zohdy, Finance Manager of Wintershall Dea and Ahmad Ali Binabood, Chief Financial Officer of Dragon Oil.

As for the Global Financial Institution of the Year Award, Banque Misr took home the prize. This category recognized global financial institutions and trade bodies that contribute to and support the energy sector.

HSE IN ENERGY EXAMINES EFFECTIVE STANDARDS, SUPPORTS DECARBONIZATION

The second day of EGYPS 2022 witnessed several discussion panels on different topics with a conference dedicated to health, safety and environment (HSE). The HSE in Energy Conference was a perfect venue for international and regional HSE experts to share their insights, examine digital innovation for developing effective health and safety standards as well as strategies for employees' health and wellbeing, in addition to discuss companies' decarbonization efforts and the growing role of leadership in ensuring high HSE standards.

The conference included three panel discussions, two fireside chats and a live Q&A session. The event was concluded by the third edition of EGYPS Global HSE Excellence Awards to recognize outstanding, effective HSE projects and programs from around the world.

The conference was opened by Sameh Sabry, Senior Vice President and Managing Director of Wintershall Dea Egypt, who referred to his company's commitment to HSE throughout its 45-year presence in Egypt. "Through those 45 years, we have been so committed to HSE," Sabry indicated.

Sabry elaborated that there is a challenge that should be addressed in this region, where the culture and mindset towards HSE are sometimes seen as a luxury, affirming that caring about the safety of people, the environment, and communities is essential.

In her keynote speech, Yasmine Fouad, Minister of Environment, highlighted the importance of population health and how this can contribute to the economic development of countries. She said that "20 years earlier, there was a contradictory relationship between development and environment; however, this concept has changed".

Fouad tackled how Egypt is supporting the oil and gas industry regionally, considering energy transition and carbon emission reduction. At the end of her speech, the minister affirmed that there are three areas the oil and gas sector should consider in partnership with the Environment Ministry for HSE as well as climate change targets, which include financing climate change projects, availability of latest technologies, and building capabilities.

STRATEGIC PRIORITIES WITHIN HSE

The first panel discussion was held under the title "Setting Up Strategic Priorities within HSE". The panel, which was moderated by Wael Amin, Head of HSE at Kuwait Energy, reviewed the key pillars that formulate companies' HSE strategies and how the industry prepared for the COVID-19 pandemic. Amir Gerges, Vice President Safety at Shell started the discussion, referring to several strategies adopted by his company including commitments and goals for achieving net zero emissions by 2050. "No harm and no leaks," Gerges explained Shell's identification for net zero. "Our approach to safety does not need to change, [it] just needs to mature," he noted.

For his part, Head of QHSES at IPR Energy Group, Hany Abdel Aziz, talked about his efforts in considering the hazards of petrochemical industries describing it as a critical industry. He said that his company updated systems according to world standards. "According to that, we had to formulate vision and mission that help us go forward the strategy," Abdel Aziz explained. He also emphasized the importance of coordination with the government.

Additionally, Fawaz Bitar, Senior Vice President, HSE and Carbon at bp, highlighted the importance of enhancing the mindset and behavior towards safety in order to achieve acceptable standards within operations. "We drive behavior and behavior drives cultures," Bitar explained. Also, he added that in order to change behaviors, trust should be built between the leadership and workforce.

Fatih Erdem, Compliance Officer and QHSE Director at TANAP, talked about how his company faced the challenges of the pandemic and the lessons learned from that experience. Furthermore, Andre Erasmus MENAAP HSE SQ Region Manager of Halliburton, discussed how the company confronted the pandemic crises. He also elaborated how his company was caring about the employees affirming the crucial role of technology in this regard.

COMPANIES STRATEGIES FOR ENERGY TRANSITION

A fireside chat entitled "Leadership strategies to ensure oil and gas companies are well prepared for the energy transition" explored how companies include decarbonization and net-zero emissions goals in their strategies, to what extent the companies are considering environmental, social and governance (ESGs) within their operation system and their outlook for oil and gas company business model in 2030.

The session was introduced by Jessica Jackson Apache's Vice President, Environment, Health and Safety and moderated by Nada El Savvy Cairo Correspondent for The National. Jackson talked about how companies are adapting strategies to accelerate the transition to net zero. She said "we as industry were committed to continuing to produce oil and gas in environmentally and



sustainable way." She noted also that the companies are seeking to reduce emissions. Jackson insisted that the world needs access to reliable and affordable energy. The vice president added also that "when we look at net-zero scenarios, it shows that there is a need for oil and gas in many decades to come even beyond 2030 and 2050."

ENVIRONMENTAL SUSTAINABILITY

In the same context, another panel discussion entitled "Environmental sustainability as the way towards a zero- carbon future" was held, tackling the strategies that the companies are adopting to reduce the greenhouse gas emissions with minimal or no effect on the bottom line. The session also addressed how the pandemic affected the companies' plans for net zero.

Iman Hill, Executive Director International Association of Oil and Gas Producers (IOGP), gave a brief explanation for what is meant by energy transition. She said it does not mean a rapid switch from using hydrocarbons to renewable energy. "Transition takes decades," Hill added. The IOGP's executive director stated that transition means to produce hydrocarbons in a cleaner way. Hill added that this terminology is related to emission reduction and scaling up the carbon capture and storage (CCS) and hydrogen.

For her part, Randa Mounir, Senior Climate Advisor at the British Embassy in Cairo, delivered clarification about sustainability. She said that we can replace it with "People, Planet and Profit". "Sustainability is to take care about people's health, to take care of planet and make a profit as well," Mounir said. She saw that this requires countries to collaborate and introduce new technologies.

In the same context, Ghada Hammouda, Chief Sustainability & Marketing Officer, Qalaa Holdings, spoke about her company's investments in the energy sector and its role in supporting the goals of sustainability. She said that the private sector should not continue in the same way as they should be more responsible and think about the environment and carbon footprint.

For his part, James Fibbens, Vice President and Senior Project Manager at Bechtel, mentioned the challenges that may be faced when implementing energy transition projects. He said that financing is the main challenge in addition to the viability and making these projects real and getting growth in the markets.

Another panel discussion was held under the title "Ensuring employees' health and wellbeing within the entire oil and gas value chain" focused on the issue of mental health of the employees and how companies are dealing with the problem.

HSE IN ENERGY AWARDS

The HSE in Energy Conference was concluded by delivering the HSE Excellence in Energy Awards. The awards were divided into four categories, addressing the oil and gas sector's successful projects and leaders that aim at creating a better and safer future. The first category of the awards was for the Best Health Project of the Year. The winner was Hussein Marwan, Badr Petroleum Company (Bapetco). Meanwhile, Amir Weam, Baker Hughes, won the highly commended project award.

The second category of the awards was for the Best Safety Project of the Year, the winner was Haitham Al Yahyai, Petroleum Development Oman (PDO). The winner of the highly commended project of the year was Tony Bocca, Bechtel. The third category of the awards was for the Best Environmental Project of the Year, the winner was Sunil Kokal, Saudi Aramco. The winner of the highly commended project of the year was Eman Hamdy, Eni.

The fourth and last category of the awards was Community Care Programme Award, and the winner was Sherif Selim, bp. The winner of the highly commended project of the year for this category was Ahmed Gabry, Shell.

EGYPS 2022: PUSHING FOR GENDER EQUALITY IN THE ENERGY SECTOR

Aligning with the Egyptian Ministry of Petroleum and Mineral Resources' gender parity objectives, EGYPS 2022 unveiled the Equality in Energy Conference on February 16th, gathering global leaders to tackle the question of what needs to be done to close the gender gap within the sector.

Opening the conference, Dawn Summers, Chief Operating Officer at Wintershall Dea, delivered her welcoming remarks, sharing the incredible journey she made to reach her current position at Wintershall Dea.

Summers referred to inequality in the workplace, highlighting the importance of having role models to encourage women to pursue their career paths. "There remain great inequalities in our industry, and the gender gap is just one of those that are obvious," Summers said, adding that "some people are unable to fulfill their full potential because of that inequality. So, we all have a responsibility to ourselves, and to others to create that opportunity and to create the environment that enables being able to grow and flourish."

IMPORTANCE OF DIVERSITY

Iman Hill, Executive Director of the International Association of Oil and Gas Producers (IOGP) moderated a panel on equality in boardrooms, and the importance of diversifying boardroom members. "Diversity whether it is gender, ethnicity, background, etc., leads to much better solutions and decision-making, which has an impact on the bottom line," Hill said.

The distinguished guests in the panel included Amal El Sheikh, Chairwoman & Managing Director at Shell Lubricants Egypt; Brian Larkin, Chief Executive Officer at United Oil & Gas; and Vidya Ramnath, President of MEA Emerson.

At the beginning, Elsheikh and Ramnath talked about the barriers facing women across their journey. El Sheikh highlighted that social paradigms are a huge barrier facing women in their careers.

Ramnath agreed, adding "one of my big barriers was confidence", pointing out that confidence could hinder women as they believe they cannot achieve the same as men.

Larkin stated the importance of having a diverse board, shedding light on the necessity of ensuring that boardroom members, whether men or women, are "ready for it."

A FIRESIDE CHAT WITH PRINCESS MORADEUN OGUNLANA

Following the panel, Enas Shabana, Communication Section Head at the Ministry of Petroleum and Mineral Resources, had a fireside chat with Princess Moradeun Ogunlana, UN Ambassador of Peace and Culture, and Founder of African Women's Health Project International (AWHPI) Global Foundation. The chat revolved around where gender mainstreaming stands when it comes to global equality.

"The power of women can never be underestimated," Princess Ogunlana said, highlighting women's multitasking and managing skills, and asking for equal opportunity and "equal pay rate for equal work."

SHIFTING FROM EMPOWERMENT TO EQUALITY

The second panel of the Equality in Energy Conference, which was moderated by Eric Oechslin, Country Director of International Labor Organization (ILO), tackled the significance of shifting from empowerment to equality and inclusive diversity in the energy industry.

Distinguished Speakers included Donna Riley, Senior Vice President of People & Culture at BP; Eleanor Rowley, Managing Director of Egypt at Capricorn Energy; Denise Abudinen, Chief Executive Officer at Enap Sipeol; Brandy Jones, Vice President of Human Resources at Apache Corporation; and Tarek Shaalan, Country Human Resources Manager at Technip Energies.

OPENING ECONOMIC DOORS FOR WOMEN

The panel titled "Empowering Women Economic Participation Through Receptive Policies" included a host of accomplished women leaders, including Microsoft Country General Manager Mirna Arif, UN Women Country Head for Egypt Christine Arab, the World Bank's Country Director for Egypt, Yemen, and Djibouti Marina Wes, a leading Strategy & Policy Advisor on Gender, Family, and Social Development Maha Akeel, as well as Alexa Tiemann who is the Lead Regional Economist from the European Bank for Reconstruction and Development (EBRD)- Southern and East Mediterranean Region. Moderated by The Energy Year's HR Director Sofija Janosevic, the discussion revolved around the subject of how women's economic participation can be enhanced from a policy perspective.



THE ROLE OF WOMEN IN ENERGY TRANSITION

Moderated by the CEO of the Bilateral US Arab Chamber of Commerce Aida Araissi, the panel discussion titled "Women and Men As Enablers of the Clean Energy Transition" tackled the issue of gender-inclusiveness, energy transition, and the relationship between the two.

For Energean's Country GM-Egypt Nicolas Katcharov, women could play a major role as both a strategic and intellectual force in pushing energy transition efforts. "Energy transition needs [a] much deeper understanding, only [an] economic, technical one, and this understanding can be supplied by more participation of women."

Being a leading woman in the energy industry herself, Siemens Energy Egypt Managing Director Layla El Hares offered a unique perspective saying "Energy poverty really affects diversity and if we use the catalyst of the energy transition to fuel and to enable energy equality, then women will have more access to education, they will be able to bring up a pool of talents both male and female in the generations to come, and we will be able to have more people to work into this transformation that we are all looking for."

The other notable speakers included Oilserv Chairperson & CEO Sara Akbar and Schlumberger's Sales & Marketing Director for Egypt, Sudan, and East Med Diane Frachon.

EQUALITY IN ENERGY AWARDS

After an inspiring speech by Princess Moradeun Ogunlana, the joyous Equality in Energy Awards ceremony commenced, recognizing women in the industry who have demonstrated excellence in their relative fields.

For the first category "Women in Leadership" sponsored by Capricorn Energy, Schneider Electric Egypt's Vice President Manal Messiha was highly commended and the winner was Emerson's MEA President Vidya Ramnath.

Coming to the second category "Stem Star of the Year", Nourwanda Serour, Research Assistant and PhD candidate at Western University, was highly commended and Bashayer Aldakkan, an MSc student at Cornell University, was named the winner.

Regarding the third category "Nex-Gen Female of the Year" sponsored by Apache Corporation, Chevron Egypt Lubricants Export Channel Manager Farah Darwish was highly commended and PETRONAS Process Engineer Irene Lock was the winner.

Moving on to the fourth category "HR Champion of the Year", Zainab Elsaee, Schlumberger's Sudan HR Manager and Egypt HR Enabler, was highly commended and Randa Esmat, Enppi's HR Assistant GM, was announced as the winner.

Finally, Baker Hughes was highly commended and Chevron was named the winner for the fifth category "Employer of the Year Championing Inclusion, Diversity and Equality".

The occasion was attended by a number of corporate and government notables including Vice-President of Apache Corporation and Country Manager for Apache in Egypt David Chi, Capricorn Energy Egypt's Managing Director Eleanor Rowley, and Egyptian Natural Gas Holding Company (EGAS) Chairman Magdy Galal among many others.

The awards ceremony was preceded by the signing of a memorandum of understanding (MoU) for the framework for cooperation on energy transition and gender empowerment in the Mediterranean and Africa. It was between the African Women's Health Project International represented by Princess Moradeun Ogunlana and the Observatoire Méditerranéen de l'Energie (OME) represented by its Director General Houba Ben Jannet Allal.

EGYPS TECHNICAL CONFERENCE SUPPORTS OPERATIONAL EXCELLENCE, HSE DEVELOPMENT

As a platform that brings national, regional and international oil & gas players together, EGYPS also serves as a meeting point for the industry technical experts from around the world who take the stage to share their expertise and insights with colleagues from around the world.

At the technical conference of EGYPS 2022, 40 sessions were delivered by more than 150 speakers from 25 countries. The conference covered several topics including exploration, field development and drilling, project management, operational excellence and health, safety and environment (HSE).

The first day of the conference had a flow of discussions aimed at giving insight into the conference's theme "Delivering Energy Today and Shaping the Future Energy Agenda". Each technical presentation aimed at providing new and innovative solutions under the umbrella of the conference's theme.

The technical session was co-chaired by Wael Korosh, Drilling and Completions Technical Advisor, Halliburton and Ahmed Atif, EUG Project Manager, Schlumberger. The technical session entitled "Smart and Digital Solutions" discussed various essential points that would aim to revolutionise the technical section of the oil and gas industry. The technical session included three imperative and interesting presentations.

The first presentation by Islam Zaki Ibrahim, Instruments and Control Maintenance Section Head, Egyptian Projects Operation and Maintenance (EPROM), Egypt addressed "Industrial Internet of Things (IIoT) data integration while mitigating cybersecurity risks".

Ibrahim began his presentation with an introduction about the importance of the Industrial Internet of Things (IIoT) in the oil and gas industry. Ibrahim said that some of the benefits of IIoT included "Using big data analysis for air-coal mix injection profiles during the cycle that automatically adjust the excess of air, avoiding waste of unburnt fuel increasing the combustion efficiency up to 6%."

Ibrahim also mentioned that, from the business viewpoint, the IIoT attends to the concerns of the identification of stakeholders and their business visions, values, and objectives in establishing an IIoT system in its business and regulatory context.

He concluded his presentation by saying that the IIoT has many advantageous features in the oil and gas industrial sector. These included, but were not limited to, ease of deployment, scalability, quick decision-making processes and big data compilation monitoring and analysis.

The second presentation addressed "Transforming Digital Twins Through Innovation". The speaker was Emad Gebesy, Senior Solution Consultant MENA at Aspentech in Qatar. Gebesy started off by introducing operational excellence with performance engineering through case studies.

Additionally, Gebesy noted that offline digital twins have some benefits such as identifying targets to achieve maximum energy recovery, reducing energy consumption through heat integration, optimizing the performance of new and existing heat exchanger networks and improving sustainability and reduction in the overall carbon footprint.

Gebesy concluded by saying that "The end-user in the offline digital twins may have no offline digital experience or technical experience, such as technicians or non-engineers, however, for the online digital twins requires technical experience and a trained background as it needs visualisation."

Ben Oudman, Director and Regional Manager, DNV GL, CEMEIA concluded the session with a presentation on "Creating trust and value from digital twins".

Oudman explained that there is a lack of trust in digital twins as human users to give the final say and call when a decision is needed. For this reason, it is crucial to increase user trust in digital twins as the technology becomes progressively more accurate and efficient.

He elaborated by mentioning that it is essential to have a quality indicator to act as a "self-diagnostic indicator that reports the trustworthiness of the results from the Functional Element." By implementing a quality indicator, the digital twins' level of trust would increase accordingly.



Oudman concluded by saying that "The organization needs to be ready and mature in order to have a successful execution."

REVOLUTIONISING THE GAS SECTOR

The second day of EGYPS Technical Conference tackled several discussions. The first technical session was co-chaired by Hamada Ahmed Mohamed, Deputy General Manager of Gas Facilities, Egyptian Natural Gas Holding Company (EGAS) and Ehab El Gayesh, Senior Contract Performance Manager, Baker Hughes.

The technical session, which was held under the title "Operational Innovations in Gas/LNG," included four presentations addressing "Gas/LNG Processing, Transportation, Operations and Technology. The first presentation addressed "Piping vibration analysis and effects". The speaker was Kamal Abo El-kamal, Senior Reliability and Condition Monitoring Engineer, Petrobel, Egypt.

Abo El-kamal kicked off the technical session by indicating that, "Vibration induced fatigue failures of pipework are a major concern due to associated issues with safety, production, cost, environmental impact and sudden release of pressurised fluids."

Additionally, Abo El-kamal mentioned that there are various different types of piping vibration assessments. On a similar note, he added that in a particular case study, "EI guidelines, piping stress analysis, Operational Deflection Shape (ODS) methodology and modal analysis [were implemented] while putting into consideration the change of gas upstream and downstream parameters." In doing so, the piping vibration analysis was carried out successfully.

Mohamed Atwa, Senior Production Technology Manager, Kuwait Energy, Egypt contributed to the session with a presentation on "Fiberglass pipelines application growth and challenges in Egypt". He introduced his idea about the benefits and challenges of Fiberglass applications in Egypt.

When discussing the Al Jahraa Gas Pipeline project, he indicated that the main aim of the project was to "Allocate gas pipeline installed between Al Ahmadi and El Salmiyah field." El Atwa explained that "a lot of challenges were faced during the planning and execution of this project."

Despite the challenges associated with the project, Atwa elaborated that there are multiple advantages of using fiberglass pipeline, such as "lower cost, higher construction speed, high corrosion resistance, low pipeline roughness, no welding or inspection is required and [there is an] adequate pressure rating to handle required inlet and discharge pressures."

Dr.Hassan Elnagar Hassan, Assistant General Manager of Operation, Alexandria National Refining and Petrochemicals Co. (ANRPC), Egypt, concluded the session with a presentation on "Improving the waxy crude oil flows by using innovative polymer as pour point depressant".

He added to his presentation with the fact that Pour Point Depressant (PPD) consumption in Egypt is high and that the problem is that "the crude oil is liquid in the reservoir temperature (70-150C) and pressure (500-1,000 bar). Once the crude oil leaves the reservoir, its temperature begins to drop due to heat loss."

Hassan explained over the course of the scientific research, "it was found that the doped polymer were more efficient as PPDs than undoped polymer.

In another session, a group of four presenters discussed "Tackling gas processing challenges". They have shared the studies conducted on some fields to mitigate such concerns. The technical session was co-chaired by Nicolas Droushiotis, Senior Project Engineer, Cyprus Hydrocarbons Company and Aamer Mohamed, Egypt Planning Lead, Apache Egypt.

The first speaker was Fawaz Agizah, QA/QC General Manager, Rashid Petroleum Company (Rashpetco), Egypt. He presented the "Challenging success for the production chemistry application programme in WDDM subsea production facilities - a case study".

According to Agizah, there are several field applications challenges and limitations that need to be taken into consideration for such applications. Some examples of such challenges range from the accumulation of huge amounts of liquid hold up in the subsea network (which could inhibit productivity) to having a shortage in chemical injection lines whether on onshore or in subsea facilities.

He concluded that with some recommendations such as, "it is necessary to consider the availability of injection lines for chemical treatment products of gas, oil or condensate to avoid utilising the existing injection line which [are] used for industrial chemicals such as Methanol and MEG".

Ehab Elghayesh, Senior Contracts Performance Manager, Baker Hughes, Egypt introduced a presentation on the "LNG processing, transportation, operations and technology". Elghayesh discussed the global view of the LNG process chain, LNG trade and refrigeration drivers as well as Baker Hughes' contribution to the LNG industry in Egypt.

Elghayesh noted that "for sure, we have a lot of lessons learned, we have a lot of experience. We are going to use our history in LNG to create a new model to enhance operations."

Mohamed Kamal Gaber, Senior Process and Pipeline Design Engineer, PETROJET, Egypt, delivered a presentation on the "Flare gas recovery – multi approaches". Gaber discussed the approach to reaching a solution to mitigate loss or waste of energy and heat through flare gas. Gaber noted that "there are 3 approaches to solutions for gas flare recovery; these are LRC, MPP and C3 recovery."

INNOVATING HSE

Also, the third day of the EGYPS technical conference comprised several significant topics. The first technical session entitled "Innovation within HSE", was co-chaired by Yasser Nour El Din, Vice President for HSEQ, Wintershall Dea and Ahmed Maher, SHE and Operations Integrity Management System Advisor, ExxonMobil. It witnessed three presentations showcasing some innovative ideas in HSE field.

The first presentation was introduced by Nazeri Nain, CEO of Keymag Controls Sdn Bhd in Malaysia under the title "Innovation in personnel movement control and monitoring from the health, safety and security perspectives". Nain started the presentation highlighting how to provide a productive and efficient working environment and ensure personnel safety and security at the same time.

He said "[we] need to integrated end- to end solutions based on integration of multiple technologies to address the challenges and also to improve the efficiency a productivity and reduce the operation cost". He introduced several solutions in these regards.

A presentation entitled "Zohr field – SIMOPS implementation of a fast-track project over construction, commissioning and production" was presented by Muhammad Sallam, Management of Change and Risk Department Manager, Petrobel.

Sallam explained the experience of managing simultaneous operations (SIMOPS) to minimize hazards in Zohr field and how it was implemented. He discussed the plan for SIMOPS management system advising after identifying the concurrent activities "minimize as possible the SIMOPS by rescheduling or re-engineering".

Sallam said SIMOPS strategy allowed to achieve one year in advance of production acceleration effect (PoD) reaching 2 billion cubic feet per day (bcf/d). He noted also that the production from the plateau reached 2.7 bcf/d five months ahead

of PoD. Sallam ended his discussion highlighting that SIMOPS management is essential approach in Fast-Track projects.

Ahmed Mohamed El Ghabban, HSE Engineer, leoc Egypt, concluded the session with a presentation on "Improvement of contractors HSE performance through digitization". He showcased a new tool for improving the HSE performance of the contractors named E-GRUVIS checklist. He explained that contractor performance will be assessed through using applicable Golden Rules checklist.

This checklist scores will be inserted on E-Gruvis system by company representative onsite, then it is reviewed by the HSE department and prepare a report for the reviews of each contractor or company, El Ghabban clarified.

UNLOCKING MATURE FIELD

In another session, four speakers introduced their presentation tackling discussions on "Unlocking the Potential of Mature Fields". It was co-chaired by Shaheen Shaheen, Chairman's Assistant of IPR Energy and Ahmed Ghonim, OT and Simulation Lead Engineer, Halliburton.

A presentation entitled "Rejuvenation of a Mature Field through STOIP Validation using an integrated 3D Geo- Cellular Dynamic Model for a Heterogeneous Multi Layered Reservoir", was given by Mostafa Mamdouh, Senior Reservoir Engineer, GUPCO. Mamdouh explained his experience of using 3D Geo- Cellular Dynamic Model in the fields having heterogeneous reservoir applied on Nezzazat group in the Gulf of Suez.

He discussed the way of developing such model concluding that "Integrated Dynamic and Static studies is the key for STOIP validation and adding more reserves within the poor quality seismic GOS fields which decrease the uncertainty levels."

Darius Shahsavari, Senior Vice President, IPR Energy delivered a presentation entitled "Economic Exploitation of Egypt's Mature Fields Post-Pandemic". He highlighted the importance of the shift toward economic exploitation of the existing mature field in the shadow of economic challenges caused by the pandemic. Also, Shahsavari mentioned the role of new technologies in this regard.

He explained three technologies that help in the early, middle and late life of the field development including Neural Network, meta-model and smart wells. Shahsavari reached to several conclusions, the most important is "these methods accelerate development, improve performance and prolong economic field life."

Another presentation was introduced by Mike Avery, Sales Engineer, oneSubsea, Schlumberger under the name "The implementation of subsea retrievable instrumented choke technology to enable production enhancement, optimization and flexibility, and deliver lowest total cost of ownership throughout the life-of-field".

Avery discussed the experience of using subsea retrievable choke measurement and gave an overview about it. He mentioned the benefits of using this technology for example managing reservoir, production allocation and optimization, reducing carbon footprint and risk management. Avery concluded "Subsea measurement is critical for production management through life of field"

At the end of the session, a presentation called "Comparative modelling study between fishbones and hydraulic fractured wells in a low-quality reservoir", discussed by Anabell Blanco, Senior Reservoir Engineer, Rock Flow Dynamics. Through her study, Blanco aimed to "evaluate two scenarios to increase the ultimate recovery in a horizontal proposal based on numerical simulation models".

She introduced an overview about each scenario. Blanco ended her presentation underlining that fishbones design is not available in the current pre-processors in the market. She added that it was coded in python embedded in the pre-processor of tNavigator: Model Designer. tNavigator simulator proved to be able of running great number of cases including LGRs in a short time frame without any conversion issue, she stated.



EGPC UNLOCKS DRILLING OPTIMIZATION INSIGHTS USING DECISIONSPACE®

HALLIBURTON

The Egyptian General Petroleum Corporation (EGPC) is a state-owned, fully integrated oil and gas company headquartered in Egypt. The National Oil Company (NOC) is a shareholder in 41 Joint Venture companies that work on more than 5000 wells.

Over the last two years, EGPC has been rapidly scaling up its digitalization efforts in response to significant exploration investments from major oil and gas companies that are shifting away from the North Sea due to tighter regulations. As part of its digitalization strategy, EGPC wanted to enhance the rig monitoring and reporting process between the Joint Venture companies.



Figure 1: Data flow between EGPC and its Joint Venture companies

After extensive technical and capability analysis, EGPC chose Halliburton Landmark as its digital transformation partner to achieve the Egyptian Ministry of Petroleum's vision of deploying a unified, central database to help in efficient monitoring and analysis of drilling and completion performance.

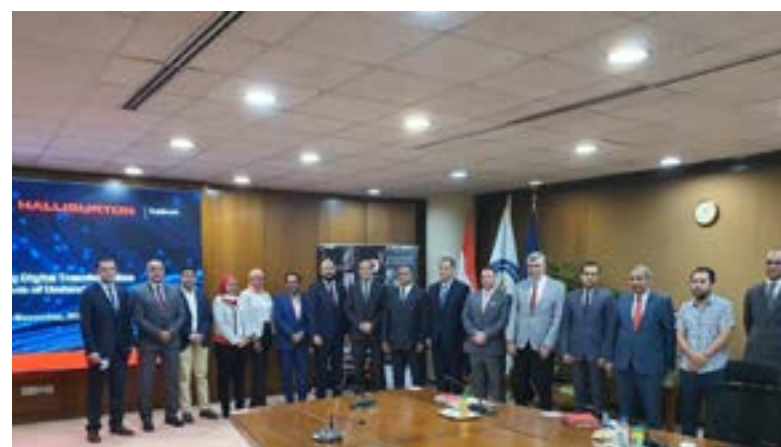


Figure 2: The Halliburton and EGPC team at the MoU signing event

The partnership was made official with an MoU and during the event, Landmark presented a pilot project to showcase a dynamic dashboard that compares historical and current drilling data to offer key insights for process optimization and productivity enhancements.



The MoU was signed by EGPC's Chairman and Halliburton's Vice President (Egypt and Libya).

UNIFYING DATA & UNCOVERING INSIGHTS FOR CONTINUOUS DRILLING OPTIMIZATION

The project had two key objectives -to streamline and simplify the reporting process between EGPC and its JVs and unlock powerful insights from Egypt's drilling operations data.

Halliburton Landmark leveraged its suite of DecisionSpace® software to build a Central Drilling Data Repository (CDDR) and layered it with powerful analytics solutions to generate real-time, drilling report dashboards.

- » EDM™ AutoSync™ software - To provide access and synchronize data across different companies.
- » EDM™ software- To aggregate and store project and corporate level data for all wells throughout their lifecycles in one database.
- » DecisionSpace® Analytics software- To effectively monitor and analyze field operations to improve drilling and completions performance using advanced data analytics solutions.

Landmark helped EGPC to tailor these real-time, dynamic dashboards for various levels of management and operation teams.



Figure 3: Dashboard that aggregates HSE trends from multiple EGPC Joint Ventures

For instance, management teams at EGPC headquarters could use the dashboards to get a quick overview of drilling and completion performance across the country, while operations teams were presented with field level data and insights.



Figure 3: Dashboard that aggregates HSE trends from multiple EGPC Joint Ventures

By accessing these drilling and well insights in real-time, EGPC could easily compare historical data with current activities to make better decisions, optimize future drilling programs, reduce NPT, and achieve better cost efficiency and productivity.



LEVERAGING CDDR TO DEPLOY A DIGITAL TWIN FOR DRILLING OPERATIONS

Leading national oil companies and international oil companies are already realizing the benefits of digital-first operations to achieve better cost efficiency, productivity improvement, and informed decision making. A CDDR serves as a key foundation that will help accelerate the delivery of a digital well construction environment covering the entire drilling lifecycle - from the planning, detailed well design and the execution phases, which are all linked and updated in real-time to enable a digital twin of Egypt's drilling operations.

With this project, Halliburton is well placed to be EGPC's strategic provider in transforming its drilling operations with our industry-leading experience and innovative, interoperable DecisionSpace® 365 software.

TO LEARN MORE ABOUT OPTIMIZING AND DIGITALIZING YOUR DRILLING AND WELL CONSTRUCTION OPERATIONS, CONTACT US TODAY!

THE FUTURE OF PETROLEUM ENGINEERING



Since the start of the petroleum industry in 1859, the environment has been affected dramatically by polluting emissions, especially carbon dioxide, in addition to destroying some food and water sources. Such effects push world leaders today to take serious actions in their global fight against climate change.

Giant companies like BP, Shell, Exxon, and Chevron face restrictions in their conventional oil and gas activities worldwide. For example, Shell put its climate target to have a net-zero emissions energy business by 2050. That will make conventional petroleum engineering less favorable compared to geothermal energy and wind energy.

ENI acquired 100% of a portfolio of 13 onshore wind farms in Italy. Exxon Mobil, under pressure on climate, aims to cut emissions intensity by 2025, while Schlumberger, Halliburton, and Baker Hughes focus now on developing services for geothermal energy as well.

That may be annoying to petroleum engineering professionals. For sure it will affect the job opportunities in the oil and gas industries for the next decade. That will be challenging especially for the junior petroleum engineers. So, the skill sets and petroleum engineering research subjects are now changing.

Data Analytics, machine learning and programming became basic skills nowadays for junior and senior petroleum engineering professionals. Companies nowadays want to save money by converting the task, that needs the local experience which is built on the local historical data, to be done by machines, especially with the current development of machine learning algorithms and the need for a data scientist in petroleum companies who understands technical disciplines and data analytics to train on these algorithms. These skills associated with programming skills are essential nowadays. As a petroleum engineer, you need to learn at least one programming language.

Although the other sources of energy other than oil and gas can be considered fragile to cope with the increasing energy demands (for example, wind energy couldn't cope with ice storms last year) the governments and world leaders put their efforts to decrease oil and gas percentage from the energy sources to save the earth.

Due to climate change, a lot of companies focus on how to use their mature fields as a source for geothermal energy where the water is injected to hot formations to be produced from other wells with elevated temperature and get the advantage of that change in temperature as a source of energy and put a lot of money in environmental engineering research subjects such as Carbon Capture & Storage to keep them working with the new global climate change rules.

Most petroleum engineering departments at universities started to deviate from the conventional petroleum engineering research subjects to geothermal energy research and carbon storage subjects. Same as petroleum engineering, geothermal energy engineering requires understanding geology, fluid flow and geo-mechanic in addition to conventional petroleum engineering subjects which give petroleum engineers a chance to find a job even amid the global shrinkage of the petroleum industry.

MOHAMED ADEL GABRY

Section head Petroleum Engineering
Khaldia Petroleum Company

EGYPT DELTA BEHAVIOR IN GAS WELLS



Nature of formations and type of reservoir drive mechanism forced all companies in Egypt's Delta since the day one for drilling phase, moreover the optimum selection for completion by using a special type of tubing string and screen, gravel pack and special surface separation package to control the produced sand and protect the surface facilities against the corrosion issue.

Therefore, we have to correlate the new wells with the offset to detect the bay zone and estimate the reserve on low case concept to confirm if the well is economic or not, taking into consideration the running drilling, completion cost and the running cost after putting the well up to production.

In addition to these points and as a real case study in my company, we drilled a well and all showed good results and reserves of around 219 bcf which considered promising and after stacking the rig and starting the drilling operations, we noticed the low penetration rate and three bits were wearing out due to the hard rocks we faced which are known as the black rocks and anhydride bright spots effect like the same from hydrocarbon indication.

So, we have to study the area clearly and make the correlation as much as possible to confirm.

As we put a plan for seismic survey study before the drilling operations and confirmed our target was Abu Madi formation, we ran with proper completion string and run in hole with screen and gravel pack. Sure we lost around 350 psi as differential press across the gravel but we gained our string and surface facilities against the corrosion phenomena.

In addition, we installed v-cone device dual phase type to confirm the productivity instead of renting a test package as a cost-wise.

Abu Madi and Kafr Elshiekh formations have known for their unconsolidated fine sand compositions and we encountered big quantities of produced sand especially with the produced water and hence we face two common problems; the first is sand fill and the second is the accumulation of sand in the pipeline which requires scheduled pigging operations in addition to sand clean out job.

I refer to the precise study for the nature of the area and the special type of material for example using 13% chrome and the proper correlation to match the interval and detect the economic reserves to take the chance to invest in Delta.

These points have to be studied carefully to be sure you are going in the right way.

Farmers' compensation is another issue in Delta and we have to hold awareness sessions for them to know that the gas industry is an important source of national income for our country and we should encourage this industry to help the society, especially the youths to find proper job chances.

NASR YASSIEN

Petro-Disouq Operations General Manager



تحت رعاية فخامة الرئيس عبد الفتاح السيسي رئيس جمهورية مصر العربية
HELD UNDER THE PATRONAGE OF HIS EXCELLENCY ABDEL FATTAH EL SISI, PRESIDENT OF THE ARAB REPUBLIC OF EGYPT



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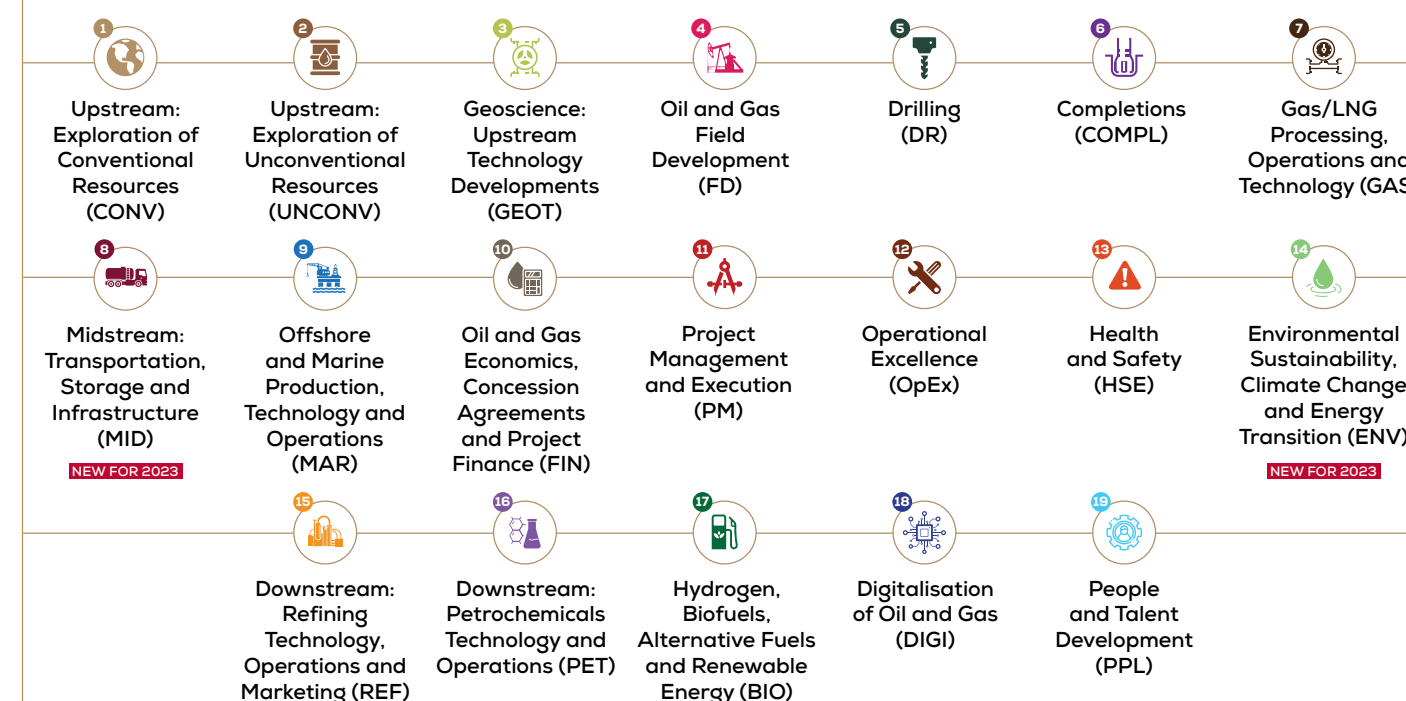
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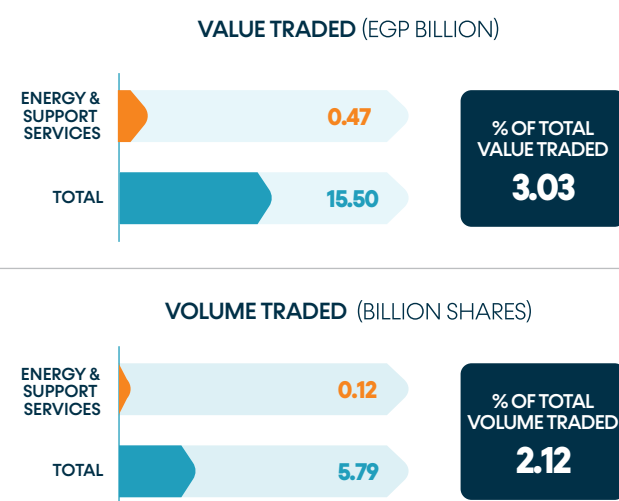
DEADLINE FOR ABSTRACT SUBMISSIONS
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Value and Volume of Shares Traded for Energy & Support Services Sector in Jan 2022

Performance of Petroleum Companies in the Egyptian Exchange in Jan 2022

 NATIONAL DRILLING		
CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
USD	4.69	-

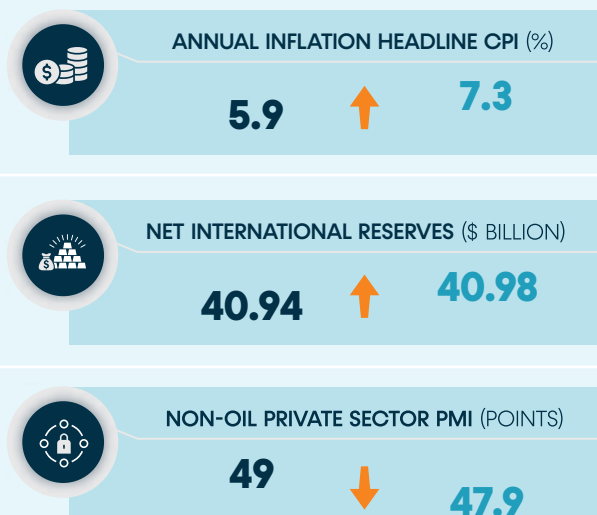
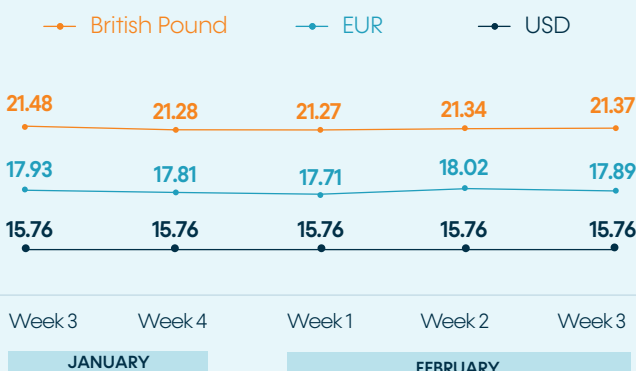
 ALEXANDRIA MINERAL OILS CO.		
CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	3.78	3.28

 EGYPT GAS		
CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	34.78	3.63

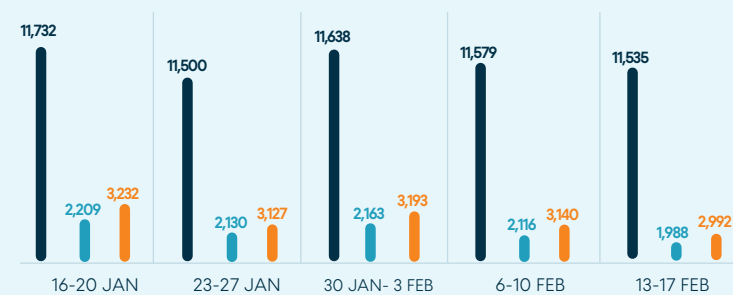
 SIDI KERIR PETROCHEMICALS		
CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	7.24	7.18

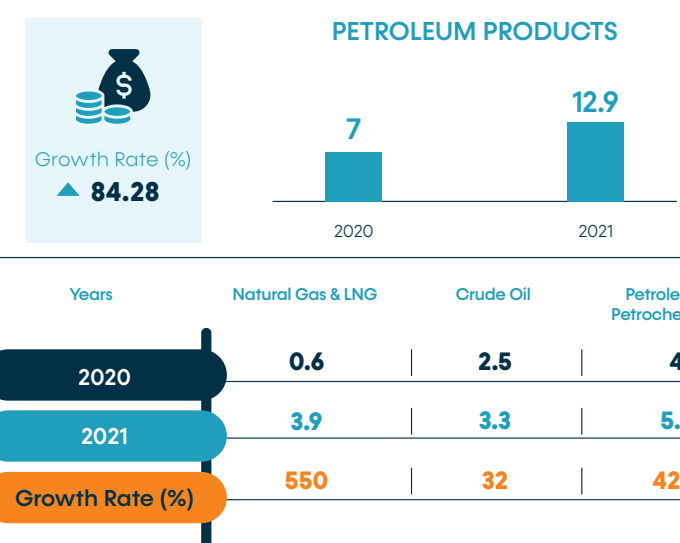
MAIN ECONOMIC INDICATORS

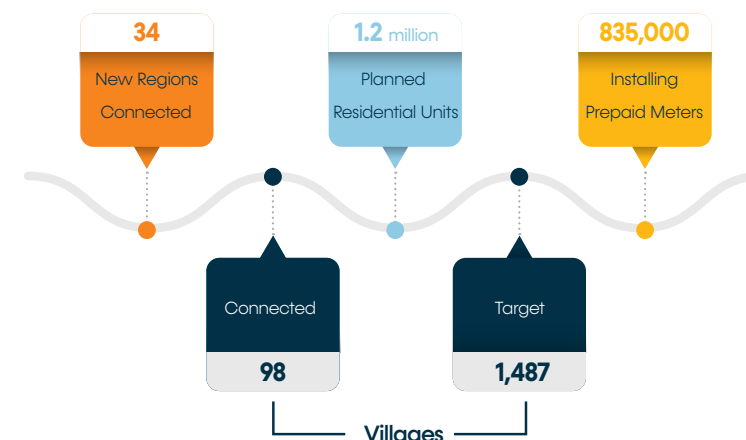
December 2021 January 2022


EXCHANGE RATES

CAPITAL MARKET INDICATORS

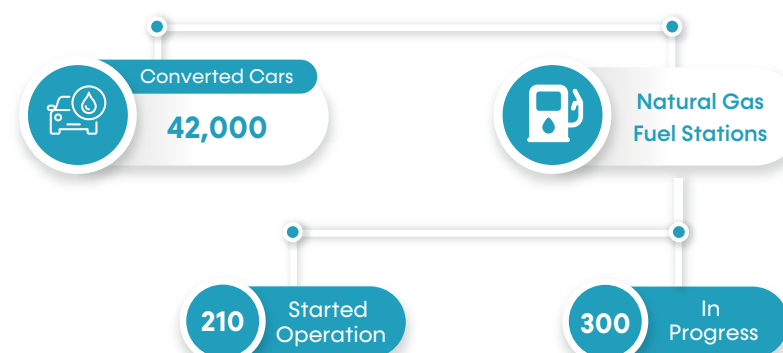
EGX 30 EGX 70 EVI EGX 100 EVI


STARTING ABU SENNAN DRILLING CAMPAIGN IN JAN

PETROLEUM SECTOR EXPORTS (\$ billion)

EGYPT SENDS 1ST LNG CARGO TO THE NETHERLANDS SINCE 2011

NATURAL GAS CONNECTION WITHIN HAYA KARIMA INITIATIVE DURING FY 2021/22


SINCE THE START OF THE INITIATIVE UNTIL THE END OF JAN 2022


EXPAND THE USE OF NATURAL GAS FOR CARS AS FUEL

INTERNATIONAL OIL PRICES

	BRENT PRICES (\$/BBL)	OPEC BASKET PRICES (\$/BBL)	NATURAL GAS PRICES (\$/MMBTU)
03 December	69.88	71.65	4.13
30 December	79.32	78.33	3.56
10 January	80.87	81.76	4.08
27 January	89.34	90.21	6.27
02 February	89.47	90.18	5.50
18 February	93.54	92.79	4.43

MINDS OF ENGINEERS. PIONEERS AT HEART.

Wintershall Dea embraces diversity because it enriches our organisation. Companies that are inclusive of people with different backgrounds, perspectives and approaches tend to outperform their competitors. We seek to recruit people with both technical and non-technical experience who can add value to Wintershall Dea, regardless of their nationality, ethnicity, gender, sexuality, age, disability or beliefs.

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