



EGYPT OIL & GAS NEWSPAPER



EXCLUSIVE INTERVIEW

DELIVERING FOR TODAY WHILE **TRANSFORMING FOR TOMORROW**

AN INTERVIEW WITH **KARIM ALAA**
Regional President – bp North Africa



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EDITOR'S LETTER

Natural Gas Outlook Amid War

Since the start of the Russian-Ukraine war in February, natural gas supplies and prices have been the main topic in the energy sector. The European high dependency on the Russian natural gas caused a serious threat in securing the continent's energy needs. EOG's April issue delves into the impact of the ongoing war on the natural gas market.

The European current natural gas shortage may provide Egypt with long-term strategic benefits. Thus, our industry insights section discusses Egypt prospects to fulfill European natural gas needs.

We are pleased to have the chance to meet with Karim Alaa, Regional President, bp North Africa. Alaa told us about the major milestones across bp's journey in Egypt. He additionally shared with us bp's strategy for Egypt for the upcoming years.

Our Research and Analysis team prepared an analytical report about Egypt's petroleum exports over fiscal years (FYs) 2019/20 and

2020/21. The technology section discusses pipe leak dedication and new technologies to protect assets.

April issue includes a full coverage for the 2nd edition of "She in Energy" event, which was held on March 28th. "She is Energy" is a Recognition Ceremony & Dinner to commemorate international women's celebrations as well as to officially announce the establishment of the Women in Energy professional network and EOG Committee's Women in Energy Taskforce. Moreover, the issue covers the 2nd EOG Committee Executive Board meeting, which was held on the sidelines of the "She in Energy" Recognition Ceremony & Dinner.

Ramadan Kareem!

MAHINAZ EL BAZ

Acting Editor-In-Chief
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PUBLICATION



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KARIM ALAA
Regional President –
bp North Africa



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TOP 5

EGYPT, EBRD SIGN LOW-CARBON ENERGY ASSESSMENT MOU

The Egyptian Ministries of Petroleum & Mineral Resources and Electricity & Renewable Energy signed a memorandum of understanding (MoU) with the European Bank for Reconstruction and Development (EBRD) to assess the economics of low-carbon hydrogen in Egypt.

Minister of Petroleum and Mineral Resources Tarek El Molla stated that signing this MoU is a vital step towards benefiting from the hydrogen opportunities in Egypt, which requires extensive cooperation and studies with the help of major international institutions.

The minister confirmed that Egypt paid great attention to the transition to clean energy and the green economy, explaining that the implementation of expansion programs using natural gas as a clean fuel was an important starting point towards energy transition and reducing emissions. The consumption of natural gas in Egypt has increased steadily to reach more than 65% of its consumption of hydrocarbons or conventional fuels, he added.

This came as a part of El Molla's speech during the celebration of the launch of the country's strategy for development cooperation between Egypt and EBRD.

Efforts included initiatives to expand the use of compressed natural gas (CNG) as a fuel for vehicles and other means of transportation. CNG is used by 420,000 cars so far, in addition to expanding the establishment of natural gas car refueling stations, which reached more than

600 stations nationwide within a short period to encourage citizens to use this service, El Molla stated.

Additionally, over 13 million households benefit from natural gas, and this number has increased through the delivery of gas to 1.2 million new units annually, El Molla noted. He pointed out that Egypt, in cooperation with the countries of the Eastern Mediterranean Gas Forum (EMGF), has launched two initiatives to decarbonize gas and use liquefied gas as fuel for ships.

EL MOLLA APPOINTS ABED EZZ EL REGAL AS CHAIRMAN FOR ABU QIR FERTILIZERS

Minister of Petroleum and Mineral Resources Tarek El Molla appointed Abed Ezz El Regal as the new Chairman of the Board of Directors and Managing Director of the Abu Qir Fertilizers and Chemical Industries Company, instead of Saad Ibrahim Abu Al Maati Hassan.

Ezz El Regal was the former chairman of the Egyptian General Petroleum Corporation (EGPC) from March 2017 to January 2022.

CABINET SETS PRICE OF BUTANE

Egyptian Prime Minister Mostafa Madbouly issued a decree number 1056 for 2022, setting butane prices.

According to the decree, the 12.5 kilograms butane cylinder should be sold to consumers for EGP 75 a cylinder, while the 25 kilograms one is set to cost EGP 150 a cylinder.

The decision was effective as of March 18th, 2022.

SCA HAS WAIVED LNG CARRIER REBATES STARTING FROM MARCH 15

The Suez Canal Authority (SCA) amended Article 2 of circular (2/2015) and its previous periodical issued on October 2021, SCA announced.

Accordingly, the SCA canceled the rebate granted to liquefied natural gas (LNG) carriers transiting the Suez Canal as per Article 2 of circular (2/2015) and its amending periodical issued on 26/10/2021, where both were suspended.

THIS PERIODICAL WAS APPLICABLE TO LNG CARRIERS AS OF MARCH 15TH, 2022.

Petrobel Awards Private Cloud Contract to Halliburton

Belayim Petroleum Company (Petrobel) awarded a contract to Halliburton as it selected the latter's iEnergy® Stack cloud solution to manage its petrotechnical software application.

Halliburton's cloud solution delivers "DecisionSpace® 365 cloud-based subscription services and supports operators' and third-parties' applications," the company said.

It is crucial for Petrobel's digital transformation to have a private cloud infrastructure. The iEnergy® Stack boosts interpretation workflows, and empowers collaborative and agile E&P workflows.

A BLAST FROM THE PAST

In April 2006, Egypt witnessed the official launching of the Idku liquefaction plant, located approximately 50km east of Alexandria.

The Idku Liquefaction facility consists of two natural gas liquefying trains, with a possibility to increase them to six. The two trains of the Idku facility are owned by the Egyptian Liquefied Natural Gas Company (ELNG), and operated by its subsidiary Egyptian Operating Company for Natural Gas Liquefaction Projects (ELNG-OPCO).

ELNG is a joint venture of two state-owned firms, namely the Egyptian Natural Gas Holding Company (EGAS), the Egyptian General Petroleum Corporation (EGPC), and three international oil companies (IOCs) as stakeholders including Petronas, Shell, and Engie.

The liquefaction plant in Idku was not exporting gas with full capacity. However, the turning of Egypt from a net importer to a natural gas exporter has brought opportunities to use the plant to export LNG. At the beginning of 2020, the plant's LNG exports did not have a very strong start as it shipped six cargoes during the period from January to March 2020. However, the exports started to increase to reach 17 cargoes in Q4 2020 and seven cargoes in January 2021.

Along with the Damietta liquefaction plant, the Idku plant is an enabler of Egypt's vision to become a regional energy trading hub. Thanks to the strong infrastructure in Egypt, and the two plants, Egypt can receive natural gas from the region's countries to re-export it to the European market as LNG.

NUMBER OF THE MONTH

50%

Egypt's Petrochemicals Revenues
Growth in FY 2020/21

The petrochemicals sector achieved an increase in its production to exceed 4 million tons (mmt) during fiscal year (FY) **2020/21**, which is attributable to the remarkable growth in its revenues in the same FY over the previous one, stated by the Minister of Petroleum and Mineral Resources, Tarek El Molla.

New Petrochemicals projects were implemented in Egypt within the framework of increasing the production and achieving the goal of becoming a regional hub for trading oil and gas: the methanol derivatives project in Suez with an investment value of **\$0.119** billion, the bioethanol project with an investment value of **\$0.112** billion, the Red Sea petrochemicals complex with investments of **\$7.5** billion and production capacity of **3.7** million tons per year (mmt/y), and the Al Alamein complex with investments of **\$8** billion with production capacity of **4.7** mmt/y.



CHEIRON



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CHEIRON is the largest Egyptian independent E&P company with operated production levels of more than 130,000 boepd, which are set to grow further. The company is focused on applying cost effective solutions, new technologies and international safety, environmental and social standards to add value across its asset portfolio. In Egypt, the company holds an interest in 21 Concessions (17 of which operated), located in the three major oil and gas basins (Gulf of Suez, Western Desert and Nile Delta). Internationally, the company also holds assets in Mexico and Romania.

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PRODUCTION

ETHYDCO PRODUCES 274,000 TONS OF ETHYLENE IN 2021

The Egyptian Ethylene and Derivatives Company (ETHYDCO) held a general assembly meeting to approve its 2021 business results, as the company's petrochemical production complex in Alexandria, which was inaugurated by President Abdel Fattah Al Sisi in 2017, is one of the most important projects in this industry.

During the meeting, ETHYDCO's Chairman Mohamed Ali Hassanein reviewed the most important milestones achieved, explaining that the company had produced more than 274,000 tons of ethylene. He highlighted that this contributed to meeting the needs of projects in a number of oil sector companies, such as Sidi Kerir Petrochemicals Company (SIDPEC) and Egyptian Petrochemicals Company (EPC).

Additionally, over 280,000 tons of polyethylene were produced to cover the local market's demands and export to foreign markets with a sales volume of EGP 7.1 billion, Hassanein stated. He also discussed the opening of new markets to export the company's products this year in a number of countries such as Sri Lanka, Canada, Uruguay, Dominican Republic, Gambia, and Burkina Faso.



The positive outcome discussed in the meeting contributed to an increase in sales revenues to about \$2.1 billion from 2017 when production started till 2021, in quantities of about 1.7 million tons of polyethylene and 224,000 tons of secondary products. This enhanced the position of the ETHYDCO complex as a major conduit for maximizing the added value of natural gas, and using it as a raw material in the petrochemical industry.

As a culmination of these efforts, ETHYDCO succeeded in being the first Egyptian company to obtain a performance certificate in operational safety, after the international company DNV-GI performed a comprehensive evaluation of the company's process safety system.

AGREEMENTS

PETROMAINT SIGNS COOPERATION AGREEMENT WITH DISCOVERY OIL SERVICES

Alexandria Petroleum Maintenance Company's (Petromaint) Chairman Ahmed Fouad signed a cooperation agreement with Discovery Oil Services, in attendance of the latter's CEO Walid Reda.

This comes as a part of Petromaint's strategy to boost cooperation with private sector companies.

The agreement aims to provide maintenance services for the natural gas and crude oil metal pipelines and add heat-resistant, high-density plastic lining.



After signing the agreement, Reda expressed his aspiration to start activating the cooperation between the two companies during the coming period.

PETROMAINT, EL WASTANI PETROLEUM SIGN BALSAM COMPRESSION STATION CONSTRUCTION CONTRACT

Alexandria Petroleum Maintenance Company (Petromaint)'s Chairman Ahmed Fouad announced the signing of a contract for the construction of Balsam compression station with the EPC system with Hazem Hafez, Chairman and Managing Director of El Wastani Petroleum Company.

The contract's value is \$2 million, and it was signed at El Wastani Petroleum's headquarters.

This comes in the framework of the directives of the Minister of Petroleum and Mineral Resource Tarek El Molla regarding the need to achieve



integration and enhance cooperation between companies affiliated with the petroleum sector in various fields.

COLLABORATION

EGYPT, GREECE TO STRENGTHEN ENERGY COOPERATION

Egyptian President Abdel Fattah El Sisi held a meeting via video conference with Greek Prime Minister Kyriakos Mitsotakis.

The talks tackled strengthening bilateral relations between the two countries, especially in energy cooperation, including electrical and gas interconnection projects, as well as cooperation in the areas of climate change, green transformation, green hydrogen, and solar energy, in light of Egypt's hosting of the UN Climate

Change Conference 2022 (COP 27) in Sharm El-Sheikh November 2022.

The two sides agreed to move forward in implementing the agreements signed between them in the energy sectors, whether in the bilateral framework or through the tripartite cooperation mechanism that brings together Egypt, Cyprus, and Greece, as well as within the framework of the strategic partnership between Egypt and the European Union (EU).

FOLLOW UPS

MADBOULY, EL MOLLA TACKLE PETROLEUM MARKET CHALLENGES AMID UKRAINE CONFLICT

Prime Minister Mostafa Madbouly met with Minister of Petroleum and Mineral Resources Tarek El Molla to follow up on the availability of petroleum products in the local markets in light of the repercussions of the current Russian-Ukrainian conflict.

Madbouly began the meeting by emphasizing that Egypt is following the current Russia-Ukraine war and its consequences on various levels, with close attention to its economic ramifications and what this entails for commodity prices worldwide.

Madbouly said that the Egyptian government under the leadership of President Abdel Fattah El Sisi, is working to provide basic and strategic commodities to citizens, including petroleum products, despite the market's current price hikes.

During the meeting, El Molla briefed the Prime Minister on the current situation of the availability of petroleum materials, as well as the available reserves and future needs.

El Molla touched on the results of his recent visit to the United States to participate in the activities of the "Africa Economy and Energy Forum", which was held during CERWeek in Houston, USA. This energy conference witnessed the participation of oil and energy ministers from 11 African countries, officials of the US Department of Energy, and corporate leaders from international oil and energy companies.

EL MOLLA, PETROLEUM SECTOR COMPANIES DISCUSS ADAPTATION STRATEGIES AMID MARKET TURBULENCE

Minister of Petroleum and Mineral Resources Tarek El Molla stated that the challenges imposed by the Russian-Ukrainian crisis reflect on all vital economic sectors around the world, especially in energy markets, which have witnessed rapid price fluctuations.

This came during El Molla's meeting to discuss the proposed scenarios and work mechanisms that can be implemented during the coming period to mitigate the consequences of the Ukraine conflict. As an importer of crude oil and petroleum products, Egyptian officials have been hard at work to cover the local market's needs across all economic sectors.

Since prices have almost doubled compared to the prices before the crisis, these plans should primarily meet the energy needs of the local market through intensifying research and exploration work. According to a statement from the ministry, this should also include rapidly developing new discoveries and placing them on production.

El Molla pointed out that this crisis further requires increasing the production capacity of Egyptian refineries to boost local production of high-quality petroleum products, raise operating efficiency, and reduce imports from abroad.

EL MOLLA PRAISES EOG COMMITTEE EFFORTS



Minister of Petroleum and Mineral Resources Tarek El Molla met with the Egypt Oil and Gas (EOG) Committee Executive Board to discuss the committee's plan for 2022. The meeting was held on March 28th, on the sidelines of the "She in Energy" Recognition Ceremony & Dinner.

During the meeting, El Molla expressed his confidence in the committee, praising its active participation in every event in the oil and gas sector and its willingness to make a success.

In his opening remarks, Mohamed Fouad, Founder of Egypt Oil and Gas (EOG) and the EOG Committee, stated the aim of the meeting is "Exploring Challenges, Producing Solutions."

He also indicated that this year's meeting celebrates 10 years of success for the EOG Committee since its establishment.

Fouad and David Chi, EOG Committee Chairman and Vice-President of Apache Corporation & Country Manager for Apache in Egypt, gave a presentation on the committee taskforces and

what has been achieved so far in the taskforces' strategies.

Chi explained in detail the Brownfields taskforce, its work, and plans for the upcoming period.

For his part, Fouad detailed the achievements of the committee's other taskforces, including the Energy Transition, HSE, Sustainable Development, and Capacity Building Taskforces.

The EOG Committee also took the opportunity of "She in Energy" to announce the launch of the Women in Energy Task Force, which aims to engage and connect women in the sector to be able to provide the needed support and share expertise.

As the meeting came to a close, El Molla suggested having a representative of government in all the Task Forces to ensure communication between the public and private sectors. El Molla further encouraged business leaders to point out the obstacles they face, promising to help override these barriers in order to be ready to face the challenges of global energy prices' fluctuation.

COP 27

EL SISI FOLLOWS UP ON COP 27 PREPARATIONS

President Abdel Fattah El Sisi met with Prime Minister Mostafa Madbouly and a number of ministers to follow up on the Higher Ministerial Committee's preparations for the UN Climate Change Conference 2022 (COP27) next November in Sharm El-Sheikh.

El Sisi emphasized the importance of providing all the necessary financial resources for the full readiness of Sharm El-Sheikh to host this prestigious global summit. He added that it's essential to support various stakeholders to enhance their efforts to organize this global event in a way that befits Egypt's regional and international status.

The ministerial committee presented the most important topics of the upcoming Sharm el-Sheikh summit and the desired results, as well as the ongoing coordination in this context with the current British presidency of the conference. The meeting further reviewed the Egyptian vision related to the substantive aspects, which is to move the work of the summit from the stage of pledges to the stage of implementation. It also touched on the importance of advancing national and African concerns on climate change issues, especially with regard to the adaptation and mitigating the effects of this phenomenon.

Developments in coordination with the UN Secretariat regarding procedures and logistical and organizational details to provide various services to participants, especially in terms of transportation, accommodation, communications, and health services were also discussed in the meeting.

EL MOLLA, SIEMENS DISCUSS COP 27 PREPARATIONS, GREEN ENERGY, INVESTMENT OPPORTUNITIES

Minister of Petroleum and Mineral Resources Tarek El Molla met with Dietmar Siersdorfer, CEO of Siemens Middle East and Siemens LLC United Arab Emirates, in the presence of Magdy Galal, Chairman of the Natural Gas Holding Company (EGAS), and Layla El Hares, Managing Director for Siemens Egypt.

The meeting reviewed Egypt's preparations to host COP 27 and the investment opportunities available in the Egyptian oil and gas industry, as well as the sharp fluctuations in the current global price levels and their effects on the economies of countries in general.

During the meeting, El Molla stated that the green energy industry and markets are still emerging and new, and that these markets need advanced technologies and further development. The minister pointed out the importance of Egypt as a regional energy center in the Eastern Mediterranean and the need to take advantage of its distinguished geographical location, especially during the current energy transition period.

Meanwhile, Siersdorfer stated that Siemens Energy seeks to develop its activity in the region and expand its activities during the coming period in the wake of the coronavirus pandemic, which witnessed a slowdown in investments, operations, and activities. However, after passing this stage, Siemens decided to expand its operations and investments, especially in the various energy fields, including the hydrogen industry in particular. The company seeks to find additional investment opportunities in Egypt and to enhance its constructive cooperation with the Egyptian state.

ENERGY TRANSITION

EL MOLLA, EBRD DISCUSS EMISSIONS REDUCTION, ENERGY TRANSITION

Minister of Petroleum and Mineral Resources Tarek El Molla held talks with European Bank for Reconstruction and Development (EBRD) Vice President for Policy and Partnerships Mark Bowman to discuss ways to boost cooperation in emissions reduction and energy transition.

Additionally, the two sides discussed rising natural gas and oil prices due to the current political crisis as well as the ongoing preparations for Egypt's hosting of COP 27.

During the meeting, El Molla affirmed Egypt's commitment to the international agreements which aim to preserve the environment and reduce carbon emissions. He indicated that the strategies adopted by the government to

support clean energy transition and emissions reduction are a key component of Egypt's Vision 2030 for sustainable development.

El Molla also emphasized the role of new technologies which opened a window not only for emissions reduction, but also for carbon capture, storage and utilization (CCSU) in value-added practices. He mentioned some of the projects in this regard including turning rice straw into wood and the trial project with Eni for carbon capture and storage at the Meleiha fields in the Western Desert. He also shed light on the initiative to use flare gas to reduce carbon emissions by more than 800,000 tons.

EL MOLLA HIGHLIGHTS EGYPT'S STRATEGY AT CERAWEEK'S ENERGY TRANSITION SESSION

Minister of Petroleum and Mineral Resources Tarek El Molla stated that Egypt's strategy to strengthen regional and international energy partnerships has contributed to securing energy in Egypt and the region, creating a booming market for natural gas in the Eastern Mediterranean and increasing demand for its supplies.

This came during the minister's participation in the session titled "Focus on Egypt: Forging partnerships for the energy transition". The session took place at the international energy conference CERAWEEK being held in Houston, Texas and organized by Standard & Poor's Global from 7 to 11 March 2022.

During the session, El Molla reviewed the current situation and challenges facing the global natural gas markets, referring to Egypt's vital

role in the field of exporting liquefied natural gas (LNG) to European markets.

The minister further talked about the current role of the Eastern Mediterranean Gas Forum (EMGF) in promoting regional cooperation and developing gas resources in the countries of the region.

El Molla highlighted Egypt's strategy to shift towards clean energy. Additionally, the minister highlighted the projects that aim to enhance energy efficiency as well as carbon capture, utilization, and storage. Egypt is currently working on these projects with a number of international partners. Moreover, El Molla also spoke about Egypt's preparations to host the COP27 in Sharm El Sheikh in November 2022.

SHELL



SHELL SIGNS TWO MOUS FOR DECARBONIZATION, CAPACITY BUILDING AT EGYPS 2022

On the sidelines of EGYPS 2022, Shell has signed two memoranda of understanding (MoUs) to cooperate with the Egyptian government in decarbonization and building capabilities.

Shell signed an MoU with the Egyptian Natural Gas Holding Company (EGAS) to cooperate in decarbonizing natural gas production and processing facilities in Egypt to support energy transition.

According to the MoU, the two companies will work on determining the options available to decarbonize the Egyptian gas industry and assess the feasibility of decarbonizing these facilities. Also, they will identify the targeted facilities which the Ministry of Petroleum and Mineral Resources is interested in decarbonizing, exchange the best practices for decarbonization strategies, as well

as evaluate the technical and financial feasibility of these strategies.

Meanwhile, Shell signed another multilateral MoU with a number of oil and gas companies to support the fourth phase of the Middle Management Program in the Petroleum Ministry as a part of the Modernization project to prepare excellent petroleum leaders.

SHELL EGYPT SIGNS TRIPARTITE COOPERATION MOU WITH EGAS, SCHLUMBERGER

Shell Egypt signed a tripartite cooperation memorandum of understanding (MoU) with the Egyptian Natural Gas Holding Company (EGAS) and leading energy technologies provider Schlumberger with the goal of developing cooperation in the field of decarbonization,

specifically hydrogen and low-carbon energy solutions.

The MoU was signed by Shell Egypt's Country Chairman and Managing Director Khaled Kacem, EGAS Chairman Magdy Galal, and Schlumberger's Managing Director for Egypt, Sudan and the East

Mediterranean Sherif Bayoumy. The signing took place during their participation in the activities of the fifth edition of the Egypt Petroleum Show (EGYPS 2022), which was held at the Egypt International Convention and Exhibition Center (IEC), from February 14 to February 16, under the patronage of President Abdel Fattah El Sisi.

EGYPT, SHELL SIGN NXPLORERS TRAINING MOU

Minister of Petroleum and Mineral Resources Tarek El Molla witnessed the signing of a memorandum of understanding (MoU) between Shell Egypt and the National Academy for Youth Training and Rehabilitation to integrate the Shell NXplorers program in the various training programs at the academy.

The MoU aims at enhancing cooperation in building youth capacities, refining their skills, preparing future leaders, in addition to using the program to train the academy's staff and develop their capabilities. The Shell NXplorers training program is specialized in developing sustainable solutions to problems.

El Molla praised the cooperation between Shell Egypt and the National Academy for Youth Training and Rehabilitation, which was able to achieve remarkable success in a short period since its establishment in August 2017.

ENI



EL MOLLA, ENI DISCUSS RAMPING UP PETROLEUM PRODUCTION, INVESTMENTS

Minister of Petroleum and Mineral Resources Tarek El Molla met with a delegation from Italian energy giant Eni to discuss its activities, projects, and investment pumping programs within the framework of the plan set to increase production levels at the current fields.

The delegation included Eni's Director General of Natural Resources Guido Brusco, the company's

Regional Manager for North Africa Antonio Panza, and its Deputy of Chief Operating Officer Natural Resources Cristian Signoretti. Egyptian Natural Gas Holding Company (EGAS) Chairman Magdy Galal and his deputy for operations, Yassin Ahmed, were also present.

The meeting reviewed the development plans for a number of fields and the timetables to put

them on the production map. They also discussed the position of the new concession areas that Eni won in the first digital international bid round. Developments in international oil prices and their impact on increasing investments opportunities were also brought up in the meeting.

ENI, LIVESTREAM LLC TO FLOAT NEOA ON LONDON STOCK EXCHANGE

Eni, through Eni International B.V., together with LiveStream LLC, announced their plan to float New Energy One Acquisition Corporation Plc ("NEOA") on the London Stock Exchange.

LiveStream and Eni are the sponsors of NEOA, which was established to participate in or

benefit from the global transition to a low carbon economy.

NEOA plans to amass up to £175 million, £17.5 million covered by Eni (with the possibility of contributing up to £25 million), through an offering and subscription in connection with admission.

As part of the sponsor group, Eni said it also will offer its strategic and technical support and unique market insight around opportunities in the decarbonization space.

EXXONMOBIL



EXXONMOBIL EGYPT CONTRIBUTES TO DEVELOPING YOUTH CAPABILITIES

ExxonMobil Egypt participated as an official sponsor in the fifth edition of the Egypt Petroleum Show (EGYPS 2022) held between 14-16 February 2022, where the company continued to provide the main sponsorship for the third year of the Youth Empowerment Programme.

Not only did ExxonMobil Egypt sponsor the program, but it was also keen to introduce new activities to provide the maximum benefit to the students.

This comes as ExxonMobil Egypt has been a key partner in various fields of development in Egypt for 120 years, as it has made many

investments and initiatives that seek to advance the community and its members. The company always aims to help develop and enhance the capabilities of young people to reach a high degree of efficiency and skill, and to keep pace with the current market needs.

METHANEX

EL MOLLA, METHANEX CORPORATION DISCUSS DAMIETTA SOCIAL RESPONSIBILITY INITIATIVES



Minister of Petroleum and Mineral Resources Tarek El Molla received a delegation from Methanex Corporation, which invests in the Egyptian petrochemical industry in partnership with the petroleum sector through a methanol production plant in Damietta Governorate.

The delegation included Brad Boyd, Senior Vice President of Corporate Resources at Methanex Corporation, and Mohamed Shendi, Managing

Director of Methanex Egypt, in the presence of Eric Ochlan, Director of the International Labour Organization (ILO) office in Cairo. Egyptian Petrochemical Holding Company (ECHM) Chairman Saad Helal, Undersecretary of the Ministry of Petroleum for the Technical Office Alaa Hagar, as well as representatives from the ILO and the Canadian Embassy in Cairo also attended the meeting.

The meeting discussed the latest programs of the company's social responsibility towards the local community in Damietta Governorate within the framework of the social role of the petroleum sector companies in their areas of work to contribute to achieving comprehensive development.

SAP



EL MOLLA, SAP PUSH FOR UNIFIED DIGITAL SYSTEM IN PETROLEUM SECTOR

Minister of Petroleum and Mineral Resources Tarek El Molla met with leading figures from German multinational software corporation SAP to discuss the latest developments in digital transformation efforts of the energy sectors in Egypt and the region.

The meeting was with SAP Executive Board Member and Financial Director Luka Mucic and

his accompanying delegation. It focused on digital transformation projects in the petroleum sector within the framework of the seventh pillar of the sector's Modernization program.

The meeting further discussed ways to enhance cooperation with the international company and benefit from its expertise, most notably the distinguished technological solutions it provides to

facilitate digital transformation in the petroleum sector.

During the meeting, El Molla stated that the petroleum sector is currently working on implementing an ambitious project to link all holding bodies and companies, as well as their subsidiaries, in a unified digital system.

UNITED OIL & GAS



UNITED OIL & GAS ANNOUNCES NEW PROGRESS IN ASD-2 WELL

United Oil & Gas PLC (United) announced the drilling updates for the development well ASD-2 located in Abu Sennan license, in which United owns 22% working interest.

The ASD-2 well encountered 25.5 meters of net oil pay for the Abu Roash and Bahariya reservoirs. Accordingly, the well is the eighth in a row to succeed at Abu Sennan license since United acquired its shares.

According to a company statement, the ASD-2 development well is the first in the company's Abu Sennan drilling campaign for 2022. After the completion of ASD-2, the company is planning to release the ECDC-6 rig and the drilling campaign will continue using the Sino Tharwa-1 rig.



EOG CELEBRATES "SHE IS ENERGY", LAUNCHES WOMEN IN ENERGY NETWORK



In its commitment to promote a gender-inclusive energy sector, "She is Energy", organized by the Egypt Oil & Gas (EOG) Committee, was an elaborate event to commemorate international women's month as well as to officially announce the establishment of the Women in Energy professional network and EOG Committee's Women in Energy Taskforce.

Attended by the industry's leading figures from both the government and corporate world, the event was honored with the presence of His Excellency Minister of Petroleum and Mineral Resources Tarek El Molla, who has not only taken decisive steps to create a prosperous energy sector but has also ensured that women are equally involved in the industry's continuous success.

"Please allow me to thank Egypt Oil & Gas for organizing this important event as usual, giving us the opportunity to celebrate and appreciate women. Looking around, I am really pleased to see many of our key partners represented here today. This really confirms that we are partners, we are one team, one industry," El Molla said during his speech. "The month of March is a very special one since we internationally celebrate Women's Day as well as celebrating Mother's Day on the domestic level. In my humble opinion, every day should be a day where we respect the abilities of women."

The event also witnessed an opening speech by the CEO and Founder of Egypt Oil & Gas (EOG) Mohamed Fouad. "With the support of His Excellency and through our newly established Women in Energy network, 'She is Energy' is our yearly industry gathering not only to celebrate the success of women in our sector, but also to motivate younger generations and to ensure the diversity of our genders in our sector is a common cause for everyone, not just for women."

He also emphasized the importance of gender equality in addressing the upcoming global challenges that humanity will have to face due to climate change. "This government and our Minister here today have made it crystal clear that the equality between women and men is imperative for us all," said Fouad. "Fighting the biggest challenges of climate change while disregarding the contribution of half of humanity is just like boxing Muhammad Ali with one hand behind your back," he added.

EOG Committee Chairman David Chi, being the Vice-President of Apache Corporation and Country Manager for Apache in Egypt, also gave an equally inspiring speech with his opening remarks. "We are here to celebrate the critical role that women play not just in our industry but in our everyday life," Chi said. "When we talk about 'She is Energy', we are talking about DEI, which means diversity, equality, and inclusion. And that has been on the top of the agenda for a lot of companies and organizations, from governments to corporations to non-profit organizations."

During his speech, Chi outlined the remarkable progress that Egypt has made in women's inclusion in both government and the private sector but insisted that there is still more work to be done. "Progress has been made, but it's not enough. We need to continue to do more and there are many things that we need to do," Chi said. "We need to continue to evaluate our HR policies in terms of how do we promote and how do we hire."

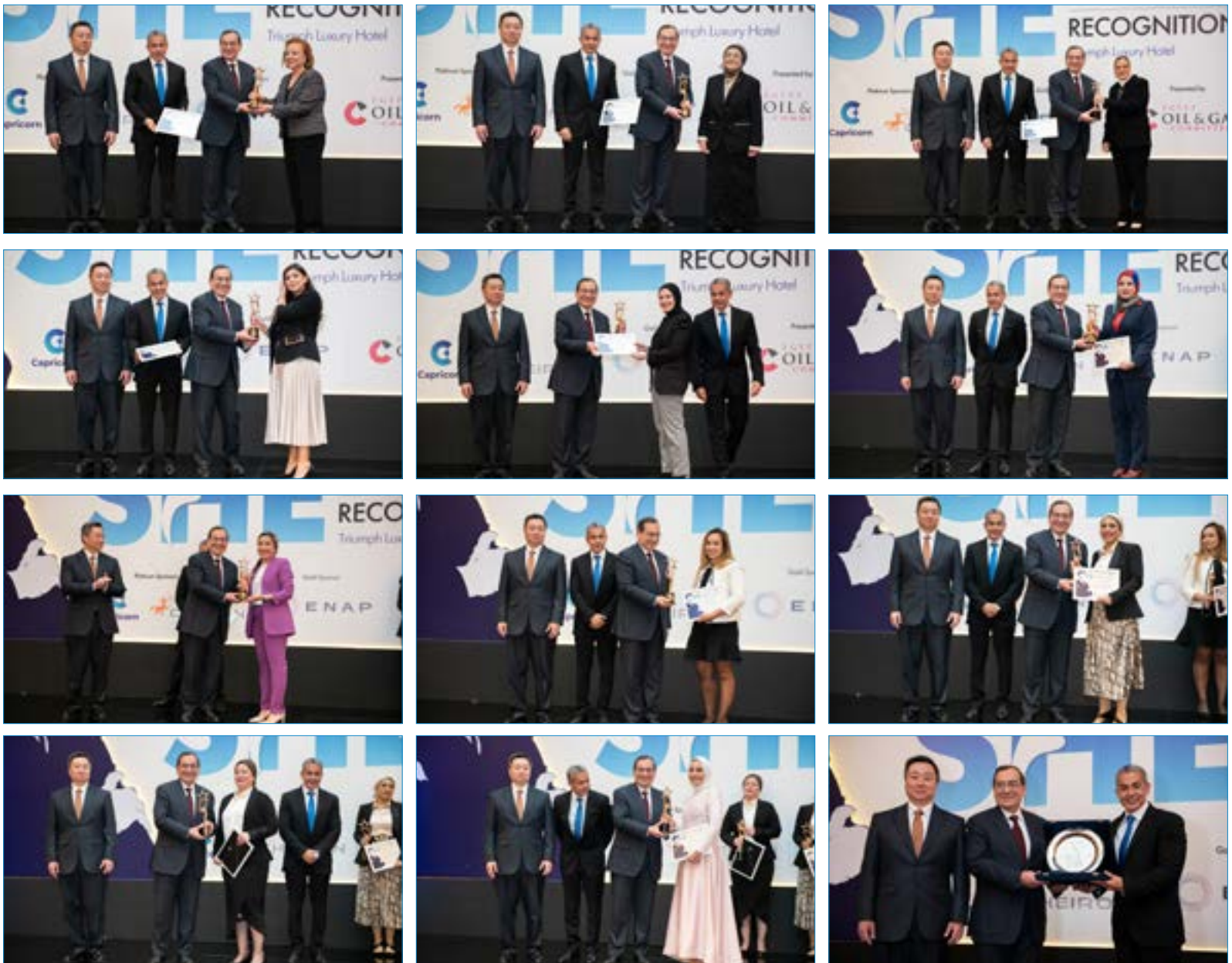


With ENAP Sipetrol as its Gold Sponsor and Capricorn Energy as its Platinum Sponsor, the event also witnessed an uplifting speech by Capricorn Egypt's Managing Director Eleanor Rowley, being one of the industry's most highly accomplished women leaders. "For me personally, there has never been a better time to be a woman in the world and there has never been a better time to be a woman in the energy industry in Egypt."

In commenting on the establishment of the Women in Energy as a professional network and an EOG taskforce she said, "Several of us had the idea that it is time to have an official professional women's network. We're going to call it 'Women in Energy' and the idea is really to connect us all together, really develop us as women so that we can reach our full potential in this industry," Rowley said. "I do want to thank personally His Excellency, Mohamed Fouad, and David Chi who when they first hear of this idea, they wholeheartedly embraced it and suggested we put it as a sub-committee under Egypt Oil & Gas to develop the initiative."

A key highlight of this joyous occasion was the engaging Women in Energy taskforce panel discussion between three highly successful women energy





AWARD-WINNERS

SHE IS ENERGY 2022

- » **Nemat Zohir** (EGPC), **Sanaa El Banaa** (EOHEM), and **Sanaa El Ashry** (EGAS) were named the individual winners of the "She is Energy" Legacy Award.
- » **Rana Ashraf** (EOHEM) and **Hana Ihab** (EOHEM) won the "She is Energy" Young Women Award.
- » From Egypt's Ministry of Petroleum and Mineral Resources (MOP), **Ingy Mostafa** and **Enas Shabana** were the winners of the "She is Energy" Inspire Award.
- » **Sara Salem** (MOP) and **Heba Abdelkader** (EGPO) won the "She is Energy" Leadership Award.
- » **Kholoud Bassiony** (MOP) and **Heba Salah** (Enppi) won the "She is Energy" Business Excellence Award.

An elaborate evening of dinner and entertainment marked the conclusion of the second successful edition of "She is Energy". It left with it the message that as much as women empowerment is an important value that everyone in the industry must uphold, it is really the limitless ambitions of well-accomplished women that truly empower the industry.

leaders. It tackled a range of different ideas on how the newly established Women in Energy taskforce could support women in the energy sector.

Adding to her speech earlier, Rowley opened up the discussion to explain the importance of the Women in Energy network saying "I think it's more than time to establish something a little bit official, and what better time than when we have multiple female managing directors to act as role models and help encourage the next generation to build their careers?"

For her part, Denisse Abudinén, CEO of ENAP Sipetrol and General Manager of ENAP Sipetrol Egypt branch, said "The base for this committee is to try to help all the women in the sector overcome their professional and personal challenges in order to develop their careers. I would like to especially support the youngest ones, the ones performing in the technical departments, because I know it's so difficult sometimes to try to do your [job]."

As Siemens Energy Egypt's Managing Director, Layla El Hares also highlighted the importance of offering a support network for women working within the energy, saying: "One of the reasons [why] we are setting up this community [is] to be able to have a vast network of women, to share experiences, share stories as per advice, maybe also share best practices in different companies. The reason we are doing this is because we want to make their life better in the workplace, ultimately because we need them in our [companies] to actually succeed. We need diversity."

Recognizing the important women leaders who have driven the industry forward and have had remarkable accomplishments was a key part of this occasion as it came to a close. For this reason, the following women were named the award-winners during the ceremony in recognition of their impressive contributions to the energy sector:

DELIVERING FOR TODAY WHILE **TRANSFORMING FOR TOMORROW**

An interview with
KARIM ALAA

Regional President – bp
North Africa



Founded its business in Egypt in 1963, bp Egypt has a long history of success in the Egyptian oil and gas sector. Can you share with us some of the major milestones across bp's journey in Egypt?

Since the early 1960s, we have been a main player in the Gulf of Suez which continues to be a major oil production area.

Building on the success we have achieved over the last 5 decades, bp has decided to focus on gas, going forward, particularly in the Nile Delta Basin. It is a world-class gas basin with a lot of growth potential, and we have already invested billions of dollars there building an extensive gas infrastructure. Today, together with our partners, bp currently produces around 60% of Egypt's gas through a joint venture with the Pharaonic Petroleum Company (PhPC) and Petrobel (IEOC JV) in the East Nile Delta as well as through the bp-operated West Nile Delta gas development.

Speaking of milestones, the ~\$9 billion WND gas development, the company's first operated asset in the country, is considered a significant contribution to fulfilling Egypt's growing energy needs. Total current gas production from the WND has reached ~ 1 billion cubic feet a day (bcf/d).

As for the East Nile Delta, we are immensely proud of the Atoll field development which now produces around 0.30 bcf/d and feeds the country's national gas grid. I can certainly say that with over 20 years of production, bp has established a strong and reliable track record in the END through its PhPC JV and other partner-operated assets.

Another important investment, as part of our existing gas portfolio in Egypt, is bp's 10% interest in the Shorouk concession, acquired in 2017, that contains the giant Zohr gas field. bp is also a 33% shareholder in UGDC, an NGL plant, as well as being present in the customers and products sector through our 40% interest in the Natural Gas Vehicles Company (NGVC) which was established in 1995 as the first company in Africa and the Middle East to commercialize natural gas as an alternative fuel for vehicles.

We take pride in our long-standing history, successfully operating in the country for almost 60 years and investing more than \$35 billion to become a major pillar of the Egyptian energy industry in partnership with the Ministry of Petroleum.

Throughout this impressive journey in Egypt, what were the factors that helped you achieve such success?

bp enjoys a strong and productive partnership with the government under the leadership of H.E. President Al Sisi. Also, H.E. Minister Tarek El Molla's support allows us, and other players, to develop Egypt's own resources to meet the country's growing energy demands.

We know Egypt well at bp – we've completed a wave of 35 major project start-ups globally since 2016 – four of them are here in Egypt, and we have assets in both the West and East Nile Delta. Egypt is a big part of our strategy and we are part of the Egyptian energy industry.

Successful relationships are built on mutual trust, value creation and shared vision and this is what shapes our operations in the country. The government, represented by the Ministry of Petroleum, has entrusted us over the years, during good and difficult times, to develop the country's own resources. In return, we've invested billions of dollars and brought in the latest cutting-edge technologies to develop national gas resources. We are all working towards the same goal which is to provide Egypt with energy that is reliable, affordable and clean.

It doesn't stop there! We also believe that a business can't succeed in isolation from its community. Over the last seven years, we have invested more than a quarter of a billion Egyptian pounds in social investment projects, with a significant portion of this investment being directed toward allowing the best and brightest Egyptians to pursue learning opportunities at the top educational institutions in the UK.

“ We take pride in our long-standing history, successfully operating in the country for almost 60 years and investing more than \$35 billion to become a major pillar of the Egyptian energy industry in partnership with the Ministry of Petroleum. ”

We have been operating successfully in Egypt for 60 years and we hope to remain in the country another 60 years.

Recently, President Abdel Fattah Al Sisi issued directives to continue coordination and cooperation with bp and overcome any obstacles that may hinder its operation. What is the significance of this presidential support for the cooperation between Egypt and bp?

We have been privileged to receive tremendous presidential support since His Excellency President Al Sisi's appointment in 2014.

In 2015, on the sidelines of a visit to the UK by His Excellency, we signed a significant acceleration Heads of Agreement to accelerate a major project that contributes to gas growth.

Also, under the patronage of His Excellency, the annual EGYPs exhibition has become a regional energy event which bp is proud to support and has been a participant in since 2017. Every year, His Excellency President Al Sisi and His Excellency, Minister El Molla meet with bp's leadership to discuss our current progress in the country as well as our future investment plans. This annual meeting is a reiteration of the ways in which Egypt fosters strategic relationships, promotes cooperation, and helps overcome challenges.

This outstanding partnership has encouraged us at bp to make every effort to meet Egypt's growing energy demands.

What is bp's strategy for Egypt for the upcoming years?

Egypt remains a core area of the bp exploration portfolio. bp's strategy is to focus on prospects that can be quickly tied back to existing infrastructure, keeping facilities full to meet Egypt's growing domestic gas market.

We intend to work together with partners on increasing gas production rates by 2024 through drilling several both onshore and offshore wells. This year, for instance, we expect to spend over a quarter of a billion dollars to maximize gas business value by leveraging our strong infrastructure, competitive gas prices, and the strategic partnerships we have with the Ministry of Petroleum.

What is bp's strategy to strengthen its position as a leading energy company?

When bp outlined its vision to reimagining energy and become a net-zero company by 2050, it set a strategy that focuses on three areas: resilient hydrocarbons, convenience and mobility, and low carbon energy. As our CEO Bernard Looney said back then, by following this strategy, we expect bp to be a very different energy company by 2030.

We know that there are challenges associated with reimagining energy, but we are taking the bull by the horns. We are confident and excited about the tremendous opportunities that exist as bp reinvents for a lower carbon future. bp is continuing to deliver for today while transforming for tomorrow and in only two years the company has delivered 11 major hydrocarbons projects,

almost doubled our EV charging points, quadrupled our renewables pipeline, and built a portfolio of significant hydrogen opportunities. Imagine what our company will have achieved eight years from now.

In Egypt, our operations are integral to delivering the company's strategy with hydrocarbons fueling the transformation for the future. Egypt remains a core area of the bp exploration portfolio and bp's strategy is to focus on prospects that can be quickly tied back to existing infrastructure. This will take less time and cost to develop future resources, and the good thing about it is that you don't need huge discoveries to make it economical.

This year, for instance, we expect to spend over a quarter of a billion dollars to maximize gas business value by leveraging our strong infrastructure, competitive gas prices, and the strategic partnerships we have with the Ministry of Petroleum.

“Every year, His Excellency President Al Sisi and His Excellency, Minister El Molla meet with bp's leadership to discuss our current progress in the country as well as our future investment plans. This annual meeting is a reiteration of the ways in which Egypt fosters strategic relationships, promotes cooperation, and helps overcome challenges.”

After acquiring 50% of the exploration rights of the EGY-MED-E5 concession area, what are bp's plans to operate in the concession area?

At the moment, we are looking at the ratification of the E5 block. We foresee potential in this block as it ties inadequately with our resilient gas strategy and we look forward to fulfilling our commitments.

What is your outlook for Egypt's oil and gas industry?

It is obvious how much the COVID-19 pandemic has impacted the market in Egypt and across the world. However, the Egyptian government has successfully managed the crisis, by setting the right policies to weather the storm as well as allowing the Egyptian energy market to grow.

Currently, Egypt consumes all produced gas domestically and surplus gas is exported from two LNG plants with a total capacity of 1.7 bcf/d. We believe that the government's recent plans to accelerate gas project developments,

“When bp outlined its vision to reimagining energy and become a net-zero company by 2050, it set a strategy that focuses on three areas: resilient hydrocarbons, convenience and mobility, and low carbon energy.”

efficient utilization of existing infrastructure, latest incentives to encourage exploration activities, and recent bid rounds can help fill supply gaps.

Egypt is also taking a balanced approach to increasing the renewables share of the Egyptian Energy mix (20% of the electricity mix in 2022 and 42% by 2035) while actively encouraging further exploration and development activities in the Egyptian oil and gas sector.

What are bp's insights for Egypt's vision to become a regional energy hub?

Egypt has everything it needs to be a regional energy hub. We are witnessing the efforts being exerted by the government day in and day out to transform Egypt into a strategic regional energy hub.

On the side-lines of EGYP, Bernard Looney and I met with H.E. President Al-Sisi and H.E. Tarek El Molla the Minister of Petroleum and Mineral Resources to present the progress of our projects and our future business plans to continue supplying Egypt with the energy it needs to support its transition plans to become a regional energy hub.

Geographically, there is no doubt that Egypt is blessed with a strategic location between the Red Sea and the Mediterranean that facilitates exports in all directions. Also, the existing energy infrastructure and network in Egypt make it ideal as a potential hub in the East Med with the Suez Canal, LNG plants in Damietta and Port Said and refineries on two coasts that can readily be integrated as part of the masterplan to establish a gas hub in the region. Speaking of which, bp has an existing LNG SPA with EGAS to purchase LNG from Damietta plant.

On the other hand, renewables have come a long way in reducing their costs thanks to the available technology and economy of scale, and Egypt is blessed with one of the best locations for wind and solar energy in the world. Also, incentives from the government will help renewables to compete with other forms of energy.

Egypt's geographic location, robust infrastructure, and its world-class natural resources make it a global crossroads and a mecca for future energy investments.

In terms of sustainability and climate action, what does bp plan for the energy transition?

bp aims to globally grow its renewables and bioenergy business, seek early positions in hydrogen and carbon capture, utilization and storage, and strengthen its gas position. These activities form an integrated low carbon portfolio that will help transform bp as we transition from an international oil company (IOC) to an integrated energy company (IEC). bp has successfully concluded several transactions in that area. In Egypt, we are consistently evaluating opportunities to support the country's energy transition plans in collaboration with the relevant Egyptian authorities.



Could you share with us some of bp's impressive CSR activities?

As I always say, our commitment to developing the communities where we operate is equally important as our commitment to providing Egypt with the energy it needs. bp Egypt delivers a wide-ranging social investment program focused on education, training, and skills development.

As part of the Ministry's fast-track middle management programme, bp extended an existing agreement for another three years to sponsor future Ministry of Petroleum leaders, providing them with the opportunity to spend six months in Egypt and the UK in bp's offices and project sites to gain on-the-job experience in the latest business and technologies applied globally. In addition, candidates receive a Project Management degree from Manchester University and on-the-job learning.

We also provide scholarships for top Egyptians to pursue post-graduate studies at the prestigious Cambridge University in the UK, in addition to scholarships through the Chevening scheme. To date, I am proud that bp has supported the funding of scholarships for over 100 highly talented Egyptian graduates.

The WND community investment program with our partner Wintershall Dea, is the biggest ever implemented in the Behera Governorate, in which the Project is located. Around \$10m is being invested in education, healthcare, entrepreneurship, and infrastructure development projects touching the lives of thousands.

Recently, we renewed our partnership with the Egyptian National Paralympic Committee to support the Committee and Egyptian athletes on their road to the Paris 2024 Paralympic games. Over the years, we have been proud to build a sustainable legacy and to show that no business can thrive in isolation from its community. I believe that business and social responsibility are meant to go hand in hand.

What are the main strides implemented at bp to cope with the sector's digital transformation?

Digitization is a key underlying enabler in bp's transformation. One of the tools bp uses empowers well planners, geologists, engineers, and executives to make better decisions based on quality data and real insight, in order to reduce risk, improve efficiency, reduce non-productive time and increase production. Also, we have deployed a tool to leverage technology and capability, enabling new goals to bring transformational benefits, i.e., big data manipulation, automation, faster and more powerful analysis, along with improving control while reducing risks. In addition, we are using more digital tools to further enhance team collaboration.

We plan to invest ~\$50m in the first deepwater Ocean Bottom Node seismic project in the Nile Delta in 2022, over the Atoll area in the East Nile Delta, to find the next generation of gas projects.



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A Brief Look at EGYPT'S PETROLEUM EXPORTS OVER FYS 2019/20 & 2020/21

BY JOLLY MONSEF, REHAM GAMAL & YOUSINA MOUNIR

Due to the spread of Covid-19 pandemic in late 2019 and the lock down, the global economy and financial markets have been severely affected. Overall, the global demand has been negatively affected; accordingly, the exports have decreased compared with the exports in the year before the pandemic.

PETROLEUM EXPORTS VALUE OVER FYS 2019/20 & 2020/21

PETROLEUM EXPORTS BY COMMODITY (\$ billion)

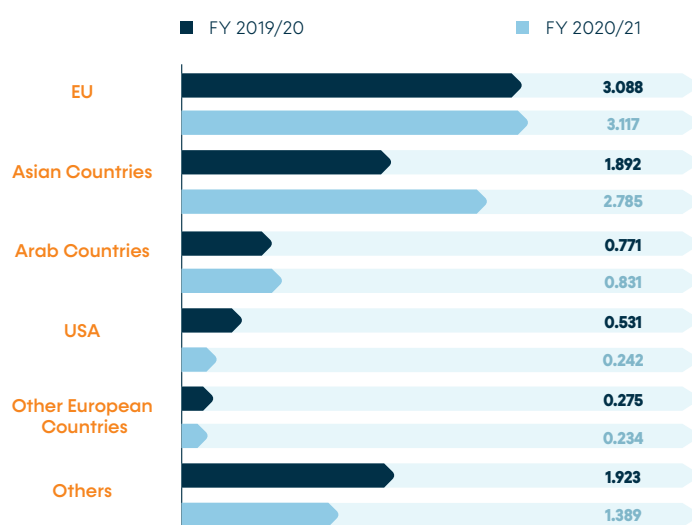
	FY 2019/20	FY 2020/21
Crude Oil	3.245	2.678
Oil Products*	5.235	5.919

*Including natural gas, bunker and jet fuel.

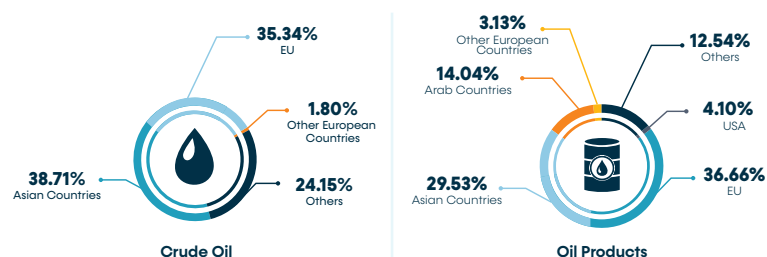
TOTAL PETROLEUM EXPORTS

FY	Value (\$ billion)	Share of Petroleum Exports from Total Exports (%)
2019/20	8.480	32
2020/21	8.597	30

PETROLEUM EXPORTS BY GEOGRAPHICAL DISTRIBUTION (\$ billion)



PETROLEUM EXPORTS SHARES BY COMMODITY & GEOGRAPHICAL DISTRIBUTION IN FY 2020/21 (%)



OIL INDUSTRIAL EXPORTS FROM FREE ZONES TO THE REST OF THE WORLD



MAIN EXPORTING CHANNELS & TERMINALS

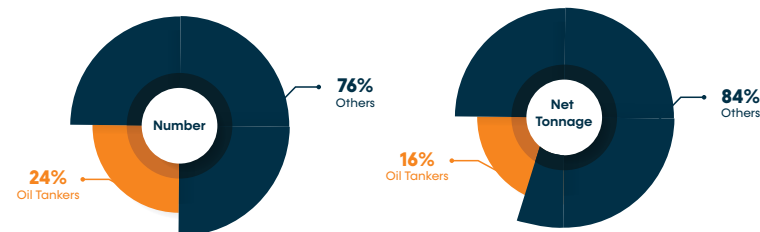
1. EXPORTING CHANNELS

TRAFFIC IN THE SUEZ CANAL

OIL TANKERS STATISTICS

FY	Number	Net Tonnage (mmt)
2019/20	5,405	253.5
2020/21	4,603	195

SHARE OF TANKERS IN FY 2020/21



2. PETROLEUM TERMINALS

12 Major Terminals for Petroleum Trading



LNG TERMINALS

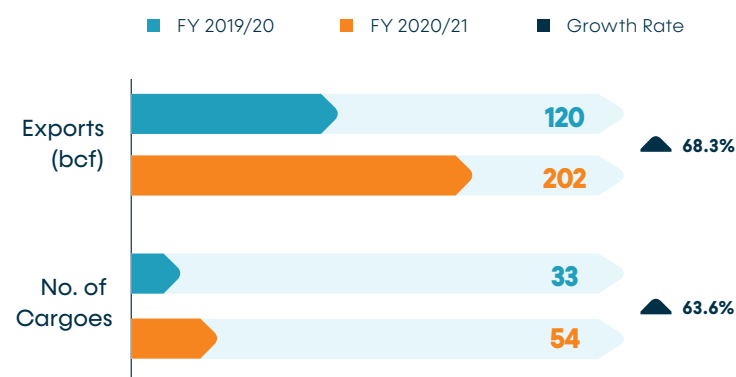
Facility	Location	Operating Year
SEGAS	Damietta	2004
Idku Facility	Idku	2001



Total Production Capacity of Idku & Damietta Plants **12** mmt/y

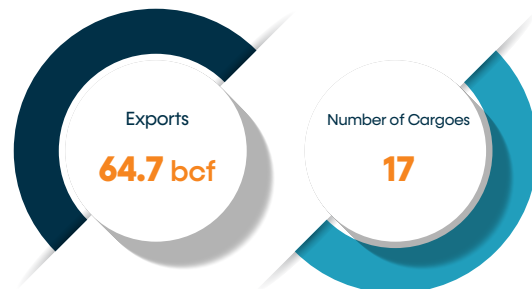
PETROLEUM EXPORTS VOLUME OVER FYS 2019/20 & 2020/21

LNG EXPORTS FROM IDKU PLANT



Damietta plant's operation resumed in January 2021 after an 8-year pause, while the LNG exports resumed was in February 2021.

LNG EXPORTS FROM DAMIETTA PLANT IN FEB 2021



LNG EXPORTS FROM DAMIETTA & IDKU PLANTS IN FY 2020/21



NATURAL GAS EXPORTS TO JORDAN THROUGH THE ARAB GAS PIPELINE (bcf)



PETROLEUM PRODUCTS EXPORTS THROUGH GOUNA PETROLEUM BASIN IN FY 2020/21*(mmt)

2	Mazut
0.4	Turbine
0.2	Propane
0.08	Naphtha
0.04	Others

*One of the Largest Petroleum Basins in Egypt

EGYPT PROSPECTS TO FULFILL EUROPEAN NATURAL GAS NEEDS

BY RANA AL KADY

Egypt is well-positioned to profit from the present energy crisis in Europe, given its increased natural gas finds, production, and LNG exports. From one perspective, Egypt might soon get to be a major energy exporter to the EU if it is able to considerably alleviate the European problem by selling LNG in large quantities to the EU. However, some experts feel that becoming a major LNG supplier to the EU is a long-term goal that will be determined by other variables rather than relieving the present situation. Thus, it is suggested that Egypt should embrace a simple strategy, maximising earnings from LNG exports to Europe, because the EU is already purchasing natural gas at higher spot rates.

OVERVIEW

To begin with, it is crucial to be able to understand the weight that the current conflict between Russia and Ukraine has on the Egyptian natural gas market and its role as a regional gas hub. First of all, it should be noted that Russia is among the globe's biggest natural gas suppliers. Russia generated 638.5 billion cubic metres (bcm) of natural gas in 2020, trailing only the United States' yearly output of 915 bcm. Europe has discovered a suitable ally in Russia to supply its energy-hungry domestic economy due to the two areas' vicinity. The EU gas market is dominated by Russia, which supplies around 38% of the overall supply.

It is important to note that a relatively significant portion of Europe's gas comes from Russia. The United States has already imposed an embargo on Russian gas imports, while the European Union has stated that it will switch to alternate suppliers and grow renewable energy more quickly to make up for the shortage. Egypt has been attempting to establish itself as an energy centre, leveraging large gas discoveries in latest years as well as massive gas reserves in the Eastern Mediterranean region. This opportunity has presented itself to be Egypt's chance to take centre stage.

LIQUIFIED EXPORTS

Egyptian gas fields and liquefaction plants were generating natural gas and LNG at record rates, according to Egyptian officials in June 2021. Egypt might potentially achieve instantaneous maximum profits because it is mostly reliant on selling its LNG supplies on the spot market at spot prices that stay quite high as compared to futures and mean pricing. Egypt, on the other hand, is unlikely to profit by willing to try to resolve this issue to the point where it prompts the EU to add Egypt to its list of major critical gas suppliers.

Owing to the absence of gas pipelines connecting Egypt to the EU, its exports can only be in the form of LNG, which certain European nations may not be able to handle given the lack of infrastructure. As a matter of fact, piped natural gas (PNG) imports are highly reliant on these nations, which include Germany, the Netherlands, Italy, and Belgium. With that, a reliance on PNG imports brings up the question of whether such nations have the infrastructure to transition to

LNG for heating systems, factory operations, energy generation, automobile fuelling, and other uses.

MAKING THE MOST OF THE SITUATION

The European gas crisis may provide Egypt with long-term strategic benefits. The present shortfalls may lower Europe's reliance on potentially disturbed PNG supply. For numerous reasons, the EU has devised a plan to increase its reliance on LNG at the expense of PNG. The capacity to store a large stash of LNG, as opposed to the complexity of doing that with PNG, and enabling the EU's exposure to new natural gas markets without becoming connected to those markets through pipelines, that could assist the EU to diversify its natural gas trade sources and reduce its dependence on piped Russian fuel supplies is absolutely crucial.

Despite this, it should be taken into consideration that, in the long haul, the issue may cause a big change in EU gas imports from PNG to LNG, allowing Egypt to become one of the continent's top suppliers. This is dependent on Egyptian authorities' ability to boost output, sign more derivative contracts, and implement more creative, efficient, and new programs to maximize the value of its energy excess, such as shipping excess electrical energy production to the EU. Also, the growth of LNG imports at the cost of PNG, or increasing European readiness to purchase LNG, weren't the only variables that will decide how much Egypt benefits from expanded gas exports. Egypt directly competes for LNG exports from Qatar and Oman, and also Russia, Norway, and Algeria; the EU's conventional natural gas producers. As suggested by an Energy & Economic Expert, "[Egypt] is trying its best to try to show the world that even in the tough times, the Egyptian oil and gas industry can be a solution to our surrounding countries and this will help Egypt's plan to be a gas hub now and in the future as well."

As a result, the Egyptian natural gas market's capacity to assist relieve the crisis and so gain in terms of enhancing its position in Europe as an LNG exporter seeking larger profit margins appears to be a potentially realistic and practical choice. Based on the aforementioned elements, Egypt's ability to gain from the crisis in the short and long term is dependent on Europe's dependency on neighboring African nations that influence the overall economic and political climate.





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HOW NATURAL GAS FITS INTO ENERGY TRANSITION PLANS

BY SARAH SAMIR & YOUSSTINA MOUNIR

The energy transition is becoming inevitable as the world moves towards cleaner energy to face climate change. In this regard, natural gas is one of the main players, and an important step in the energy transition path. The world has been seeing natural gas not only as cleaner fossil fuel with low-emission, but also as a cost effective one. However, in recent days the prices of different energy sources have been climbing after the Russian invasion of Ukraine. This change has raised the question of the economic feasibility of natural gas at the moment.

NATURAL GAS: A TRANSITIONAL FUEL

Completely shifting to the renewable energy sources is infeasible as it needs a huge amount of money, and will take a lot of time to have the technology to produce enough energy to cover the global demands. Therefore, using fossil fuels for the coming years is inevitable, especially in developing countries that have hydrocarbon resources as well as renewable resources, but don't have the money to cover the expenses to generate renewable energy.

Accordingly, the need to use natural gas as a low-carbon emission source spurred energy policy-makers to encourage using natural gas as an alternative transitional fuel. Therefore, Egypt adopted several initiatives aiming at increasing the usage of natural gas as a fuel. Accordingly, natural gas was delivered to 13 million residential units until March 2022, in order to be used as an alternative to the expensive imported butane. Additionally, the North African country has been encouraging drivers to convert their vehicles to be compressed natural gas (CNG)-fueled or to be dual fueled, using either CNG or benzene. Hence, the number of converted cars reached 420,000 vehicles, while the number of CNG fueling stations recorded 600 stations since the start of the initiative to March 2022.

Egypt did not only use natural gas as an alternative fuel, but it also started encouraging using flare gas to power petroleum facilities. Accordingly, 13 projects to use flare gases in petroleum facilities were implemented.

While it is environmentally safe, natural gas is the economic fuel source for both individuals and governments. In order to generate electricity from renewable sources, the cost could be unaffordable for many countries and may need a lot of time to be feasible. Additionally, using natural gas in appliances and heating and the lower natural gas prices "led to savings of almost \$50 billion for customers who have used natural gas for heating, cooking and clothes drying over the past four years," The American Gas Association (AGA) said, adding that "annual energy costs for residential customers using natural gas has been lower than the cost for propane, fuel oil, or electricity since 2010 - and it's projected to stay low through 2040."

TOWARDS GREEN HYDROGEN

Natural gas is not only used directly as a fuel, but it is also used as a source of producing green, economic fuel sources. Hence, the Egyptian Ministry of Petroleum & Mineral Resources and the Ministry of Electricity & Renewable Energy sealed a memorandum of understanding (MoU) with the European Bank for Reconstruction and Development (EBRD) in order for the latter to assess the economics of low-carbon hydrogen in Egypt.

Previously, in July 2021, Egypt also signed an agreement with Italy's Eni to assess both the commercial and technical feasibility of hydrogen projects. According to the agreement, the parties would study producing green hydrogen from renewable sources, while producing blue hydrogen from natural gas. Egypt has a plan to have 42% of its energy produced from renewables by 2035. Accordingly, the feasibility of producing low-carbon hydrogen from natural gas is higher.

However, blue hydrogen is believed to be a temporary step towards green hydrogen, which is "the end goal", according to Science Business. This temporary

step is taken as blue hydrogen is cheaper than green hydrogen. However, some energy leaders believe it is an unfeasible step as it's costly compared to natural gas and is in fact not much lower in terms of emissions. "The carbon capture and storage technology used in the production of this fossil hydrogen is extremely expensive and so far unproven on the scale that would be required," Silvia Pastorelli, climate and energy campaigner at Greenpeace, said, according to Science Business.

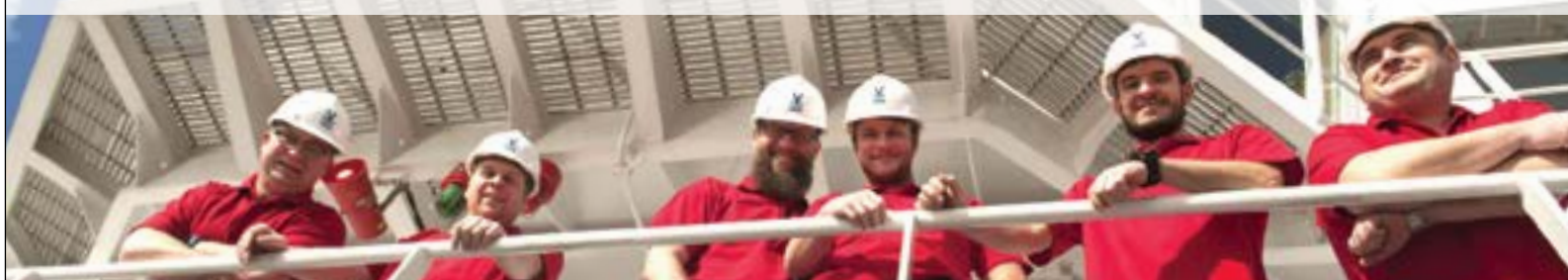
NATURAL GAS PRICES

Amid the fossil fuels' prices turbulence, caused by the current Russian-Ukrainian war, natural gas prices were also affected. Natural gas prices were \$4.59 per million Btu on February 23rd, a day before the invasion. The prices reached \$4.78 per million Btu on the invasion day increasing by 4.14%, according to the energy information administration (EIA) records. Meanwhile, Brent Oil recorded \$95.73 a barrel, which was the highest price on February 23rd, compared to \$102.26 highest price per barrel on the day of the invasion, making a 6.8% increase overnight, based on the price published by Live Charts UK.

The price changes show how natural gas remains more affordable compared to oil, and how using it could still be economically feasible. Yet, the world is still on watch due to the changes caused by the war. A concern keeps arising as to whether or not the future of natural gas will still be economically feasible as the best transitional fuel.



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PIPE LEAK DETECTION: AT THE FOREFRONT OF ASSET PROTECTION

BY NADER RAMADAN

Pipe leaks in oil and gas have been and remain to be one of the most formidable threats to not only businesses, communities, and the natural environment, but to the well-being of the sector itself. Asset protection has become an essential component for the natural gas industry's economic health, as pipelines and equipment are at the mercy of the elements. Natural disasters or dramatic changes in the environment constantly pose a threat to the infrastructure needed to sustain prosperous communities and profitable industries. As natural gas has become a favorable transitional fuel to cut down on carbon emissions, leak detection in the natural gas industry has moved up the priority list on everyone's agenda. Taking huge steps ahead, innovative research has been done by both long-established multinational companies and recent start-ups to enhance pipeline leak detection. The methods and technologies are many, but the solutions that demonstrate excellence in pinpointing the exact location of a leak are few.

Going back to the basics, researchers have found that sound is one of the key elements that can help experts find natural gas leaks. Acoustic emission sensors, being the main tool for acoustic detection techniques, primarily rely on irregularities in the background noise pattern. This approach is preferable due to its accuracy and its applicability on a wide variety of different sized pipelines. Nonetheless, acoustic monitoring still has difficulty in detecting small leaks and at times false alarms are commonplace. Acoustic techniques have sometimes been used in detecting leaks in water pipelines through the use of pressure transient sensors, hydrophones, and flow meters.

Proving to be particularly cost-effective, flow monitoring technologies are especially useful since they pay specific attention to the rate of change of pressure or the mass flow throughout various points along the pipeline. Any notable difference in the rate of pressure change or the mass flow between two points in the pipeline may indicate a leak. The issue with using flowing monitor technologies is that they are inaccurate in locating leaks and also trigger false alarms.

With its flexibility being an attractive incentive for the market, fiber optics is without a doubt a popular option. Fiber optic sensors have been proven to be effective for detecting gas leaks since they are based on Distributed Temperature Sensing Technology (DTS). This means that local temperature changes are used to determine the exact location of the leak and it can be done over huge distances with one DTS processor unit being able to cover up to 72 kilometers of pipeline. The same principle can be applied to liquefied natural gas (LNG). In the event of a leak within

pressurized gas pipelines, a cold zone will be created by the leaked gas. On the other hand, pipelines carrying oil would increase temperatures at the exact location where the leakage occurs. Fiber optic detection can work on a wide variety of liquid and gas products, including oil, natural gas (including liquefied natural gas), ammonia, and ethylene.

As experts work to make further enhancements and incorporate better software, software based dynamic modeling has also proven to be a useful tool to monitor flow patterns in natural gas pipelines, which can be used to detect the presence of a leak when it happens. Experts are ecstatic with this technology because of its notable ability to offer continuous and accurate monitoring. Though this technology has an impressive record, there is room for improvement since it can be costly to apply on large pipe networks in addition to having a high rate of false alarm incidents.

With natural gas being a more realistic approach for energy transition, especially in the developing world, innovative startups and prestigious multinational corporations are working hard to bring the best that asset monitoring solutions have to offer. The advancement of satellite technology has also opened doors to new possibilities in asset protection, especially with advanced satellite based hyperspectral imaging becoming a useful tool for zeroing in on the location of gas leaks. In order to improve asset protection practices, professionals working in the industry need to explore every technological solution with an open mind, as an open mind creates new doors to the future and endless opportunities.

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NATURAL GAS: FUEL OF EGYPT'S VISION 2030

BY FATMA AHMED

While vying for significant economic reforms, Egypt set a target to fulfill sustainable development goals (SDGs). For both ends, the country launched in 2016 its long-term strategic plan, "Egypt Vision 2030", which aims to meet SDGs goals in all fields, including the energy sector. Energy is the second pillar of the vision that aims to provide energy needs while maximizing the efficiency of the various traditional and renewable energy resources.

With the latest natural gas discoveries, Egypt became able not only to provide citizens with an economically affordable energy source, but also a source with the least impact on the environment. Hence, natural gas stands as the perfect fuel for Egypt Vision 2030.

Why Natural Gas?

Several countries, including Egypt, focused on natural gas as a main source of energy in their SDGs plans for several reasons. One of the most convincing of these reasons is being one of the cheapest resources. According to the U.S. Department of Energy, "in the equivalent amount of energy (per 1 MW), natural gas capital intensity is \$1,023, whereas, for example, solar power capital intensity is \$3,873", as stated in an article entitled "The Role of Natural Gas in Achieving Sustainable Development Goals".

At the same time, the emissions released from natural gas while generating electricity, is between 45% to 55% lower than coal, according to the International Energy Agency (IEA). The mentioned article clarified that natural gas doesn't contain solid contaminants or other harmful components. According to experts, another good thing about natural gas is the ability to install its infrastructure in a shorter time than coal or nuclear plants so it is saving time and is cost-effective.

When it comes to Egypt, the country witnessed several major natural gas discoveries during the past few years. These discoveries including Zohr giant field helped Egypt achieve unprecedented production rates of natural gas reaching more than 7 billion cubic feet per day (bcf/d) until June 2021. These high rates of production pushed Egypt to be the second-largest country producing natural gas in Africa and the fifth in the Middle East during 2020 after producing 58.5 billion cubic meters (bcm). Also, these discoveries helped Egypt achieve self-sufficiency of natural gas and transform from natural gas importer to exporter.

Moreover, the Minister of Petroleum and Mineral Resources, Tarek El Molla, highlighted that Egypt along with the East Mediterranean Gas Forum (EMGF) members launched the initiative of removing carbon from natural gas and using liquefied natural gas (LNG) as a marine fuel.

Right Track

Capitalizing on the new high production rates, Egypt launched several initiatives to expand the utilization of natural gas as an energy source. In 2020, the state launched the initiative of converting vehicles to run on natural gas as fuel. In cooperation with the

Micro, Small, and Medium Enterprise Development Agency (MSMEDA), some facilitations were put in place to encourage citizens to convert their cars including installing the costs of conversion and removing any financial burdens on car owners.

The Minister has announced recently that the number of converted vehicles reached 430,000. Moreover, the government urged the expansion of the service centers and natural gas supply stations during the past period to cover most of the republic's regions. El Molla stated that the number of the stations recorded was more than 600 by March 2022.

Regarding households, Egyptian President Abdel Fattah Al-Sisi kicked off another initiative to install the costs of connections and without a down payment to help poor people benefit from natural gas. The Minister noted in remarks to media that the Ministry is actively working on connecting natural gas to cover most areas, especially the new cities as well as the remote ones. He stated that 13 million housing units are already connected and the Ministry is working on delivering natural gas to 1.2 million households annually.

Moreover, in January 2021, Egypt launched the Hayah Karema initiative "Decent Live" to link natural gas to the poor villages and establish a network there targeting to install the needed infrastructure for 1,403 villages with the first phase including 59 have been already connected to the natural gas grid.

When it comes to the industrial sector, the Ministry is trying to maximize the number of industrial facilities benefitting from natural gas. According to the Egyptian Natural Gas Holding Company (EGAS), natural gas was provided for 95 factories and 5,200 commercial establishments including 3,200 subsidized municipal bakeries during the fiscal year (FY) 2020/21.

Going Forward

Depending on it as one of the main supporters for its sustainable development strategy, Egypt is still working on expanding the utilization of natural gas. The Ministry announced in the achievement report between 2014 to 2021, its target to add 400,000 converted cars during the coming three years.

Also, the government aims to increase the natural gas supply stations to 1,000 across the republic. So, by such great interest in capitalizing on natural gas, Egypt is doing well to achieve its vision to become an important regional energy hub.





THE TOLL OF HIGHER OIL PRICES

BY IHAB SHAARAWY

The oil industry is known to be a global game where what happens in political and economic scenes impacts the price of oil. However, with prices of the oil barrel passing \$100, the black gold may emerge as a gamechanger itself in the economics and geopolitics of the world.

Bushed by rising demand and uncertainty created by the Russia-Ukraine war, oil prices soared to record high. Many experts believe that these higher prices are likely to stay, for a while at least.

The consequences of the rising oil prices will not only hit the countries' economies and households but also the world politics and alliances while altering energy transition roadmaps.

EVERYONE WILL FEEL THE PINCH

The Russian military operation in Ukraine prompted a series of Western sanctions and disrupted global energy markets. The rise in oil prices is expected to increase inflation and reduce world economic growth. The oil prices don't only affect the prices of goods made with petroleum products, but also costs such as transportation, manufacturing, and heating; thus many people around the world will feel the pinch.

The problem is even more complicated for Europe, which depends on Russia for most of its energy imports. While Ukrainian cities have fallen to the mercy of the Russian missiles, the European countries were under the mercy of the Russian energy supplies, as all attempts to compensate Russian gas have fallen.

Even before the beginning of the Russian operations in Ukraine, the United States was desperate to secure the energy needs of its European allies. It was impossible to dispense with the large supplies from Russia amid the increased demand and the limited world supplies in the wake of the coronavirus pandemic.

The pressure of increased prices amid the Russia-Ukraine war and the refusal of big producers to ramp up production pushed the US to change some of its tactics and policies.

The crisis has brought Gulf energy exporters, such as the UAE and Saudi Arabia to the spotlight again and even sent Biden administration officials to Venezuela and accelerated nuclear talks with Iran.

NEW ALLIANCES ON THE HORIZON

Most of the Gulf states, which for decades have been viewed as US allies, have pursued a neutral stance to preserve co-operation with Moscow on geopolitical and energy issues, rejecting Western accusations that refusing to condemn Russia is tantamount to supporting the invasion.

Officials from Gulf states expressed their belief that taking sides would only lead to more violence and encouraged at the same time all parties to resort to diplomatic action and to negotiate to find a political solution.

Even with oil prices soaring above \$100 a barrel, Saudi Arabia has resisted US pressure to pump more oil; even with Prince Mohammed bin Salman insisting that the kingdom was committed to Opec+.

Some analysts see the Gulf States' behavior as an indicator of their desire to build multiple alliances and relationships with other major powers, primarily China and Russia.

There are also analysts who think that Gulf monarchies' refusal to side with the US and Europe against Russia is only an approach to protecting national interests and avoiding the costs of strategic alignment.

Regardless of the real reason behind the Gulf States' stance, one clear thing is the shift in their relations with the US, which was viewed for years as the guarantor of the Gulf security.

Saudi and Emirati officials have signaled that the relationship with Washington has deteriorated during the Biden administration and expressed that they want more support for their war in Yemen. They also expressed their opposition to the US attempts to return to the Iran nuclear deal.

According to a Wall Street Journal report, Saudi Arabia has even entered talks with Beijing to price some of its oil sales to China in yuan, a move that would dent the US dollar's dominance of the global petroleum market and mark another shift by the world's top crude exporter toward Asia.

Biden administration officials traveled to Venezuela for talks on potentially allowing the country to sell its oil on the international market, helping to replace Russian fuel. They also hoped that a looming nuclear deal with Iran could bring significant volumes of Iranian oil back to the market.

However, experts indicate that for now, Saudi Arabia, which leads the OPEC producers' cartel, and the UAE are the only two oil producers with significant spare capacity that can stabilize the market, thereby preventing prices from reaching — or even exceeding — \$150 per barrel. This puts Biden in a quandary over his deteriorated relations with Gulf countries.

Despite being the biggest oil producer in the world, the US is going to suffer too as +\$100 oil barrel is set to squeeze American households, push up inflation, put a dent in the economic recovery and create a new headache for the Federal Reserve as it moves to raise interest rates.

POLITICAL DILEMMA

The crude oil shock is not only more likely to cause electoral turnarounds in several countries where the population will be affected by the severe economic consequences.

As a World Bank study suggests, voters usually tend to act on a rise or decline in the price of fuel as oil price movements are politically significant and have the power to displace governments. The higher prices may even cause a reversal in the political leaning of the voters with some right-wing supporters go to the left or vice versa.

Using polling data from 207 elections across 50 democracies over the past 40 years, the study shows that oil price hikes a year before the election drastically reduce the ruling party's chances of retaining power. Specifically, the study finds that a 0.1% increase in crude oil prices, adjusted for each country's oil imports as a share of gross domestic product (GDP), reduces the re-election chance of the ruling party by 0.5-0.8 percentage points.

Moreover, rising oil prices will encourage companies to try to find more oil supplies, even if it is expensive. Since the oil shock of the 1970s, a new wave of countries has started producing oil such as Venezuela, Russia and remote places like the Antarctic.

If oil prices remain high, that could lead to a rush to drill more oil, as hydrocarbon companies look to cash in on the higher price and ramping up fossil fuel production runs counter to urgent calls to decarbonize to slow global warming.

For decades, oil has been caught in a boom-and-bust cycle, where high prices spur investment in oil and gas drilling which, in turn, leads to lower prices that increase demand for oil. There is little reason to think this time would be any different.

Also, higher oil prices have always led to an improvement in the position of oil exporters like OPEC countries, while leading to a deterioration in the position of oil importers. There is little reason to think this time would be any different too.



HOW THE RUSSIAN-UKRAINIAN CONFLICT REVEALS THE VULNERABILITY OF GLOBAL ENERGY SYSTEMS

BY Mohsen Ahmed Farhan Ali ,Drilling Department Head at General Petroleum Company (GPC) and Kuwait Oil Company (KOC) Consultant

There is no doubt that the current crisis between Russia and Ukraine has created shockwaves in global energy markets. Russia, being one of the largest oil and gas producers in the world, is Europe's key natural gas supplier exporting its supplies through several gas pipelines. One of the main pipelines passes through Ukraine, which means that supplying gas to Europe has proven to be risky and dangerous under the current war conditions.

Factoring in political pressures and economic sanctions against Russia, Europe's industrial centers of power face the challenge of securing the needed energy resources with scarce alternatives to compensate for supply disruptions. As one of the world's largest oil and gas producers, the US may resort to using strategic reserves to quench Europe's thirst for energy as an alternative to Russian gas in an attempt to remedy the dangerous negative effects of the economic sanctions.

The Russian/Ukrainian war revealed the global energy market's nature, especially oil & gas market rules and oil barrel pricing game principles. Also, the deep effects of oil and gas energy on the economies of the different countries worldwide and its relationship with the food crisis in some developing countries due to heightened inflation rates in most world states, leading to more poverty, food shortages, and poor nutrition in several areas in the world.

An important issue that has become clear is the lack of available, sufficient, viable, reliable, and affordable sources for energy, except fossil hydrocarbons (oil & gas) as the global economy is still highly dependent on conventional oil & gas. Therefore, there will be a massive effect on economic development plans in all countries due to oil & gas supply shortages and increasing global oil & gas prices.

As a fixed economic rule, the oil barrel prices depend on the supply volume of and the global demand for oil. Consequently, any oil supply disruption due to geopolitical crises, technical problems, or economic sanctions will force oil prices up and create difficult economic conditions for most developing countries worldwide.

In conclusion, the global oil & gas market is in dire need of international laws for protection against the fallout of geopolitical crises, conflicts/wars, and economic sanctions. These laws should work to secure the suitable supply volume for oil and gas needs on a global scale at reasonable prices for the consumer and producer simultaneously.

The proposed ideological framework for these laws/legislations should be as follows; a. oil & gas supply & demand has to be out of any sanctions at all times to protect the global market from failure due to dramatic oil price fluctuations so that it does not disrupt development plans or cause economic crises in other countries, b. secure all oil & gas supplies and means of transportation, pipelines & oil/LNG tankers, around the world, c. oil producers remain committed to providing suitable oil and gas volumes to compensate any global supply shortages to sustain the global oil & gas market stability and guarantee good profits for producers at the same time, d. the main consumers worldwide and the greatest world's economies have to support large-scale oil & gas projects in oil-producing countries through investment plans and generous funding options, e. international criminalization for any attack on oil & gas wells, facilities, pipelines, and tankers worldwide even in cases of wars or armed conflicts.

The creation of the international legislations/regulations for the global energy market will help oil & gas producers and energy consumers adapt to sudden geopolitical changes, wars, and long-term armed disputes. It will also protect communities from negative economic impacts and living difficulties that result from the fluctuation of oil & gas supply volumes and prices.

New studies for oil & gas reserves development and enhanced hydrocarbon recovery from the subsurface may be a way to ensure that energy supply meets the needs of continuously increasing global energy demands. On the other hand, the research and development in the area of green energy may have great benefits in the future, especially for environmental conservation and emissions reduction.

In summary, all energy sources, be it conventional fossil fuels or green energy, need to be managed and regulated through a global legal system for the well-being of the global community in its entirety.



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LOCAL PRODUCTION OF POUR POINT DEPRESSANT FOR CRUDE OIL



Crude oil extraction can prove costly, complex, and presents many different challenges, depending on field conditions, climate, and oil composition, among others. When temperatures decrease, paraffin crystals grow to create a crystalline net, which consequently traps liquid hydrocarbon molecules until the oil cannot flow. Paraffin deposition is responsible for declining production, in terms of the facility maintenance and removal of deposits already formed, increasing the cost of producing and transporting oil products and mainly causing some handling problems in regions where the service temperatures are or have become seasonally very low. Hence, while producing, storing, and transporting paraffin-based crude oil and its products, it is essential to keep the oil at a temperature that exceeds its natural pour point. Thus, flow improvers, crystal modifiers, and pour point reducers are chemical products that are essential for reducing the apparent viscosity, the flow limit, and the pour point of oils.

Paraffin wax deposition from crude oil at low temperatures is one of the serious and long-standing problems in the petroleum industry. Low temperatures can cause crystals of wax to easily form impermeable cakes, which block filters and eventually result in engine failure. Many methods have been attempted to prevent the crystals from mating together.

Given that the addition of chemical additives (such as pour point depressants (PPDs), cold flow improvers, paraffin inhibitors, or wax crystal modifiers) is the most convenient and cost-efficient approach to ease oil flow. It is widely used in the industry. It has been observed that using additives play a vital role in changing the shape of the wax crystal. Many postulated mechanisms have been put forward to explain this phenomenon and to illustrate the PPD product design. Among the mechanism theories, adsorption, co-crystallization, nucleation, and improved wax solubility are widely accepted by researchers. At present, the majority of the pour point depressants are macromolecule polymers, such as ethylene-vinyl acetate copolymer (EVA). Although EVA is widely applied as the crude oil flowing modifier agent, it does not well perform for crude oil. To improve the effect of pour point depressant, the polar groups and the branched chains should be introduced into the macromolecule of EVA.

There are many types of research, but there are many patents in petroleum additives in the Egyptian Patent Office including but not limited to the use of polymeric materials that are processed locally and produced different kinds of polymers pour point depressant of crude oil. In addition, the used innovative solvent (PONA), which is obtained from the process of hydrotreating and separation of straight-run naphtha to dissolve polymers, can be used as a pour point depressant of crude oil. This innovation included a study conducted on crude oil. When we used a concentration of 2500 ppm of polymer, the pour point of crude oil has decreased from +42 to -6 °C as a result of the innovative solvent (PONA) in the case of crude oil and represents a new achievement.

DR.CHEM. HASSAN EL-NAGAR HASSAN

Assistant General Manager of Operation
Alexandria National Refining and Petrochemicals Co. (ANRPC),
Alexandria, Egypt

THE RUSSIA-UKRAINE WAR: OIL PRICES & THEIR IMPACT ON EGYPT'S ECONOMY



World oil prices jumped more than 8% to above \$105 per barrel of Brent crude for the first time since 2014. Higher oil prices increase the cost of importing it to Egypt, thus reflecting on the state budget, particularly with regard to the fuel subsidy clause.

A several-week rise in oil prices near these levels could lead to a new rise in gasoline prices and possibly other fuels at the next meeting of the Committee of Automatic Pricing of Petroleum Products next month. The World Bank said that each \$10 increase in the price of world oil from the estimated price in Egypt's general budget this fiscal year will result in a 0.2% to 0.3% increase in the GDP deficit. Egypt estimates a barrel of Brent crude in the state budget for the current fiscal year at \$60, so the current price is about \$45 above this level.

The impact of high or low oil prices on the Egyptian economy will not be significant as Egypt is becoming self-sufficient in petroleum products depending on the replacement of gasoline, butane, and diesel with natural gas. High oil prices mean higher prices for petrochemical products, jet fuel, and NAFTA exported abroad, which will contribute to the high profitability of Egyptian petrochemical companies, fertilizers, and modern refineries.

Natural gas prices increased by 5.9% to \$4.90 per million British units. High natural gas prices are a positive factor for Egypt as a gas exporter, so the price increase reflects positively on its oil revenues. Egypt's LNG exports reached \$3.9 billion in 2021, up from a total of \$12.9 billion last year, according to official data. Before the outbreak of the Russia-Ukraine conflict, Europe and the United States were looking for an alternative to meet their natural gas needs fearing that tensions on the Russia-Ukraine borders might escalate into a full-scale war and result in supply shortages.

Europe's increasing energy needs in light of rising gas prices is a good opportunity for Egypt to increase its LNG exports. However, some suggest that the benefits from this opportunity will be limited, since Egypt's two natural gas liquefaction plants will be operating at their maximum capacity and, therefore, will be unable to export additional shipments.

Although Egypt is the world's largest wheat importer with both Russia and Ukraine being its main suppliers, it does not expect a significant impact as an immediate consequence of the Russian-Ukrainian conflict. There are sufficient wheat reserves that will last more than four months and Egypt's strategic wheat stock is sufficient for five months. On April 15, domestic wheat production will be combined, which means the country will have enough wheat for nine months.

For tourism, Russia and Ukraine are two of Egypt's main clients, so the outbreak of war is expected to affect the numbers of Russian and Ukrainian tourists coming to Egypt.

ENG. MOHAMED ABDELRAOUF

Qarun Petroleum Company
Production General Manager

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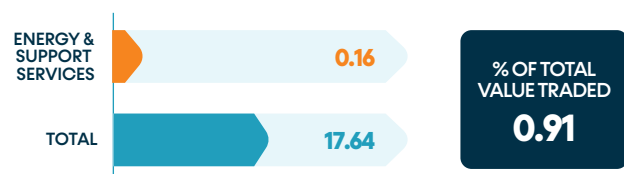


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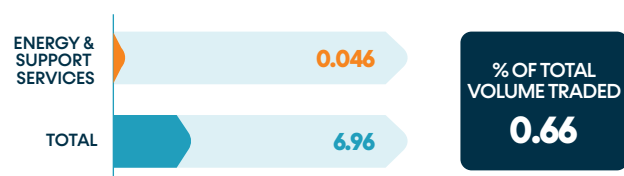


Value and Volume of Shares Traded for Energy & Support Services Sector in February 2022

VALUE TRADED (EGP BILLION)



VOLUME TRADED (BILLION SHARES)



Performance of Petroleum Companies in the Egyptian Exchange in February 2022



NATIONAL DRILLING

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



ALEXANDRIA MINERAL OILS CO.

CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	3.55	3.01



EGYPT GAS

CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	30.77	14.74



SIDI KERIR PETROCHEMICALS

CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	7.33	6.03

MAIN ECONOMIC INDICATORS

January 2022

February 2022



ANNUAL INFLATION HEADLINE CPI (%)

7.3 ↑ 8.8



NET INTERNATIONAL RESERVES (\$ BILLION)

40.98 ↑ 40.99



NON-OIL PRIVATE SECTOR PMI (POINTS)

47.9 ↑ 48.1

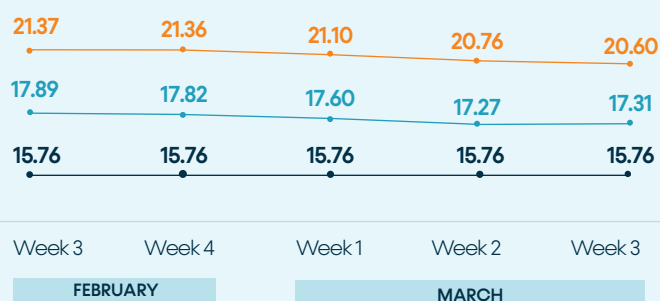


EXCHANGE RATES

British Pound

EUR

USD

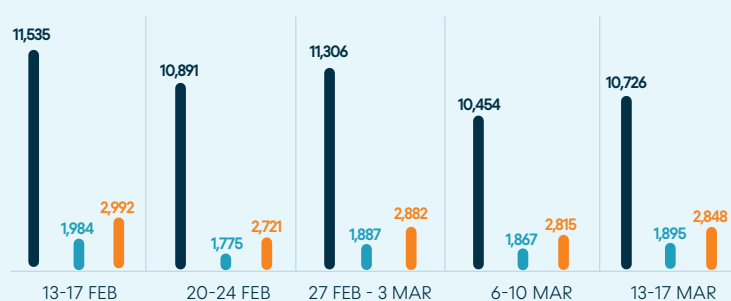


CAPITAL MARKET INDICATORS

EGX 30

EGX 70 EWI

EGX 100 EWI



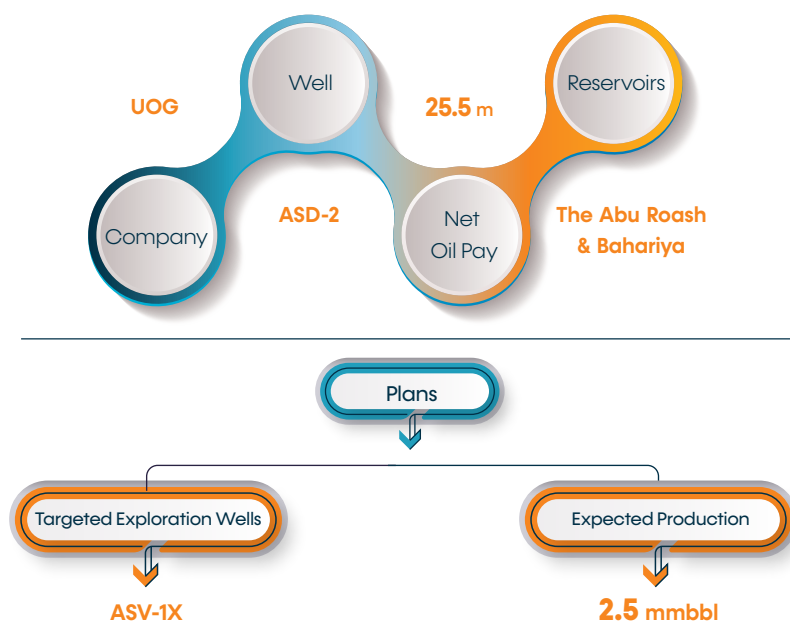
Source of Raw Data: CBE, CAPMAS, Egyptian Exchange, IHS Markit

ACHIEVING NEW OIL DISCOVERY IN THE GULF OF SUEZ*



*Announced in February 2022

ABU SENNAN DRILLING CAMPAIGN UPDATES*



*Announced in March 2022

SIGNING NEW CONSTRUCTION CONTRACT FOR COMPRESSION STATION



AWARDING THE INTERNATIONAL TENDER FOR SHIPS' BUNKERING ACTIVITY



THE RESULTS

Date	February 2022	
Awarded Companies	No. of Licenses	Regions
Minerva & Peninsula	2	The Mediterranean Sea
Minerva & Coral Energy	2	The Red Sea

SIGNING FINANCING CONTRACTS FOR HYDROCRACKING COMPLEX



INTERNATIONAL OIL PRICES

	BRENT PRICES (\$/BBL)	OPEC BASKET PRICES (\$/BBL)	NATURAL GAS PRICES (\$/MMBTU)
05 January	80.80	80.08	3.88
31 January	91.21	90.89	4.87
10 February	91.41	92.89	3.96
24 February	99.08	101.22	4.57
08 March	127.98	127.93	4.53
17 March	106.64	104.96	4.99

i-Trak drilling automation services

Get safe, efficient, and predictable drilling performance

i-Trak™ drilling automation services from Baker Hughes reduce operational risk and well delivery costs by integrating and automating drilling systems.

In today's complex drilling environment where surface and downhole real-time systems must deliver according to plan in a predictable, efficient, and safe manner, automation of drilling systems is crucial. The drive to reduce HSE risks by moving personnel from wellsite red zones to remote centers is simplified and supported through the integration and automation of drilling systems.

Baker Hughes's i-Trak drilling automation services improve drilling performance, wellbore quality and trajectory; extend bit life; reduce nonproductive and invisible lost time (NPT, ILT) to deliver wells faster and more economically while reducing operational risk to enable de-manning at the rigsite. These benefits are achieved by aggregating real-time surface and downhole data and annular pressures, and using hybrid physics-based and data-driven models, in combination with automated standardized operating procedures and checklists.

Our i-Trak drilling automation services manage well construction via fully closed loop-control of Baker Hughes rotary steerable assemblies, wellbore

hydraulics, and drilling optimization services.

i-Trak services offers two levels of automated control:

- **Advisory mode:** recommended actions or parameters are displayed to the driller who can accept or reject them
- **Closed-loop mode:** parameter changes and instructions are automatically downlinked to downhole tools or transmitted to rig automation platforms to control surface parameters.

In closed-loop mode, the human driller can start/stop the system at any time to make any desired adjustments to the drilling path or operational parameters.

The i-Trak service is a fully integrated extension of Baker Hughes' digital well planning software and ecosystem. This allows i-Trak to monitor and control drilling and reservoir navigation operations based on a continuously updated digital twin of the reservoir and downhole environment.

Contact your Baker Hughes representative to learn how i-Trak drilling automation services can help you achieve safer, more efficient, and more predictable performance on your next well.

Applications

- Wells with inefficient, or inconsistent or unpredictable drilling performance
- Wells with hole cleaning issues, stability issues, or challenging pressure windows
- Wells that must be consistently and repetitively drilled
- Wells using decision-making remote operations or leveraging integrated operations personnel models

Benefits

- Improved safety, lower risks
 - Openhole pressure regime monitoring with automated alerts
 - Swab/surge NPT protection
 - Reduced personnel risks
- Superior drilling and reservoir navigation efficiency
 - Improved hole cleaning
 - Optimized tripping speeds
 - Guaranteed average-excess dogleg severity limits (AEDLS) <1°/100 ft. (30m)
 - Increased hydrocarbon recovery
- Predictable drilling performance
 - Increased gross ROP
 - Fewer stuck pipe incidents
 - Reduced NPT and ILT