EGYPT OIL&GAS NEWSPAPER

Egypt's Leading Oil And Gas Monthly Publication

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WINTERSHALL DEA, EGYPT

CELEBRATE PARTNERSHIP, COMMITMENT FOR A SUSTAINABLE FUTURE

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EDITOR'S LETTER

A devastating climate situation and a global energy crisis have made the UN's COP 27 climate conference in Sharm El-Sheikh a moment of choice for world leaders. This year's COP offers a rare opportunity for oil and gas companies to spread awareness about their efforts in decarbonization. Decarbonization was not only the buzzword during the conference, but it also became one of the main targets of the oil and gas sector all over the world. In our issue, we are casting light on the oil sector's efforts to significantly reduce carbon emissions.

In our Overview, we offer insight into Egypt's plans and achievements in this regard, while our Industry Insights section will give you a deep understanding of the decarbonization strategies that some of the oil companies are implementing. We also cover the economic and technical aspects of decarbonization in other sections of our newspaper.

Our issue was also interested in highlighting the African countries' call for a just energy transition that can guarantee them to use their resources for growth and development while going into transition. You can learn more about this from our coverage of the "From Cape to Sharm: A Common African Voice for COP27" discussion panel, which was held at the closing event of Africa Energy Week in Cape Town, South Africa.

Our team was also fortunate to attend a magnificent night at the historic Abdeen Palace, where Wintershall Dea gathered the company's partners and friends to celebrate their successful partnerships and highlight their long-term commitment to Egypt

IHAB SHAARAWY
Managing Editor

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Wintershall Dea, Egypt Celebrate Partnership, Commitment for a Sustainable Future

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SUCCESSFUL CASES WORLDWIDE

1. The first mobile vehicle-mounted compressor unit for pipeline gas transfer.
2. The Integral skid-mounted reciprocating compressor unit for pipeline gas pressurization in Chad.
3. Reciprocating Compressor for gas transmission in Iraq.
4. Skid-mounted screw compressor for low pressure coalbed methane boosting.
5. 8 x 1200KW gas gen-sets for Kazakh associated gas power generation project in March, 2017.
6. Skid-mounted high efficiency three phase separator.

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TOP 5

EL SISI DISCUSSES GREEN HYDROGEN, AMMONIA COOPERATION WITH FFI

President Abdel Fattah El Sisi met with Andrew Forrest, President of the Australian Fortescue Future Industries (FFI) Energy, in the presence of Mohamed Shaker, Minister of Electricity and Renewable Energy; Tarek El Molla, Minister of Petroleum and Mineral Resources; and Moataz Kandil, Regional General Manager for the Middle East and North Africa region of the company.

The meeting followed up on the cooperation between the Australian company and the electricity and renewable energy sector in Egypt in the field of producing green hydrogen and green ammonia, including a project to produce 9.2 gigawatts of electric power from new and renewable energy, in addition to the localization of industries related to the generation of electricity from the sun and wind, such as solar panels and wind turbines.

El Sisi emphasized the importance of providing all the necessary facilities to accelerate the implementation of joint green energy projects and to benefit from the advanced expertise of Australian companies in this field. This also fits within the framework of the national strategy that aims to increase the contribution of renewable energy within the electric energy mix.

MADBOULY, UN ENVOY DISCUSS EMISSIONS REDUCTION EFFORTS

Prime Minister Mostafa Madbouly met with Mark Carney, the United Nations (UN)'s Special Envoy on Labor and Climate Action & Finance, and Co-Chair of the "Glasgow Financial Alliance for Net Zero Emissions," on the sidelines of his participation in the Egypt-ICF 2022 in its second edition, which started on September 7th in the New Administrative Capital under the auspices of President Abdel Fattah El-Sisi. The meeting was attended by Minister of International Cooperation, Rania Al-Mashat, according to the Cabinet statement.

Madbouly reviewed Egypt's vision to chair the 27th session of the Conference of the States Parties to the United Nations Framework Convention on Climate Change (COP27), which will be hosted by Sharm el-Sheikh next November, highlighting the focus on implementing this vision in line with the commitments of the "Glasgow Financial Alliance for Net Zero Emissions."

EL MOLLA HOLDS NATURAL GAS TALKS WITH CYPRIOT ENERGY MINISTER AT GASTECH 2022

Minister of Petroleum and Mineral Resources Tarek El Molla held talks with Cypriot Minister of Energy, Commerce and Industry Natasa Pilides on the sidelines of his participation at the Gastech Exhibition and Conference 2022 in Milan, Italy.

During the meeting, the two ministers discussed joint cooperation projects and the conditions of the oil and gas market in light of the challenges that they face. They further reviewed the current status of the gas discoveries made in Cyprus and how to optimize their exploitation, noting that Cyprus seeks to benefit from Egypt's facilities and infrastructure which will receive Cypriot gas after developing the discoveries which serve the interests of both countries.

EL MOLLA: EGYPT TARGETS OIL, GAS INVESTMENTS OF UP TO $8B IN 2022/23

Minister of Petroleum and Mineral Resources Tarek El Molla declared that Egypt seeks to achieve between $7.7 billion to $8 billion in oil and gas sector investments during fiscal year (FY) 2022/23, Bloomberg Alsharq reported.

Given so, it is expected that investments from international oil companies will increase 35% to 40% compared to $5.7 billion in the last FY.

El Molla also stated that there is petroleum cooperation with Qatar, especially with QatarEnergy company in a group of concessions in the Mediterranean and the Red Sea.

Additionally, El Molla mentioned that Egypt targets more natural gas exports than the current amounts which are worth $500 million per month.

OIL, GAS SECTOR TO PARTICIPATE IN DECARBONIZATION DAY DURING COP27

Minister of Petroleum and Mineral Resources Tarek El Molla held a meeting with a delegation from the Oil and Gas Committee at the American Chamber of Commerce in Cairo to coordinate efforts to prepare for the participation of the oil and gas sector in Decarbonization Day, which will be organized at COP27, which Egypt will host in Sharm El Sheikh this coming November.

The meeting was attended by the CEO of the American Chamber of Commerce in Cairo Sylvia Menassa and the heads and representatives of American companies operating in Egypt, including Bechtel, Honeywell, Schlumberger, Baker Hughes, Apache, Chevron, ExxonMobil, and the two undersecretaries of the Ministry of Petroleum for projects and technical office, and the Vice President of the Egyptian Natural Gas Holding Company (EGAS) for Green Energy.

During the meeting, El Molla confirmed that Egypt is the first country to provide an opportunity for the oil and gas industry and its international companies at the climate summit to present their actual plans for environmental improvement and reducing emissions from the activities of this industry by using the latest technologies.

A BLAST FROM THE PAST

On **November 17th** of each year, the Egyptian petroleum sector celebrates Egyptian Petroleum Day and this year marks its 47th anniversary.

It is the date that marks the restoration of Egypt's sovereignty over all of Sinai's oil fields that were occupied by the Israeli army during the war. This was in accordance with the second disengagement agreement with Israel on November 17, 1975, which was marked as a holiday for the Egyptian petroleum sector.

Later, Egypt regained control over the Shaab Ali field in the southern Gulf of Suez on November 25, 1979, and this was within the fourth stage of the withdrawal after the signing of the peace agreement with Israel. This field covered about 50% of Israel's oil needs and was called an "Israeli treasure", and for this reason, it was of paramount importance in the Egyptian-Israeli peace negotiations.

The American company OMCO, which had a concession in the region, received the field. From that point came the challenge of receiving the field from the Israeli side, a task taken up by Engineer Hamdi Al-Banbi, the former Minister of Petroleum and head of GUPCO at the time, who headed the committee tasked with this mission. According to his account, it was one of the most difficult tasks and moments in his professional life.

NUMBER OF THE MONTH

84

Exported LNG Cargos from Idku & Damietta Plants in FY 2021/22

Egyptian liquified natural gas (LNG) exports recorded unprecedented increases in its history as LNG cargos from Damietta and Idku plants transported **324.28** bcf of natural gas in FY 2021/22; most of which were directed to European countries, according to EGAS Annual Report 2021/22.

This came in line with Egypt's initiatives to increase LNG exports in order to benefit from high LNG global prices, generate high revenues, and secure foreign currency to support the trade balance and overcome the global economic crisis.

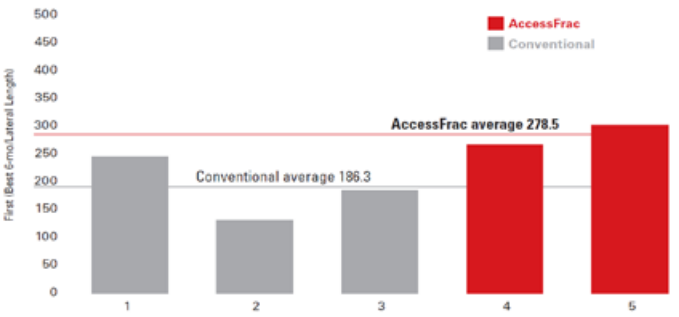
AccessFrac® Stimulation Service

Improved Reservoir Access Through Effective Stimulation Treatment Diversion

Overview

AccessFrac® stimulation service can result in increased stimulated reservoir volume and greatly improved reservoir contact through two processes:

1. Increasing proppant fracture volume in complex fracture networks by placing more proppant inside the intersection created and natural fractures
2. Placing the designed amount of proppant inside each perforation cluster in multi-zone treatments



Cumulative production from wells completed with AccessFrac® compared to wells completed conventionally.

Treatments Tailored to Well Requirements

AccessFrac® PD: Improves proppant distribution in multi-zone completions.

AccessFrac® RF: For refracturing treatments which enables the sealing off of existing perforations in order to stimulate bypassed and new intervals.

AccessFrac® CF: Enhances the development of complex fracture networks helping improve the ultimate hydrocarbon recovery and daily production rates.

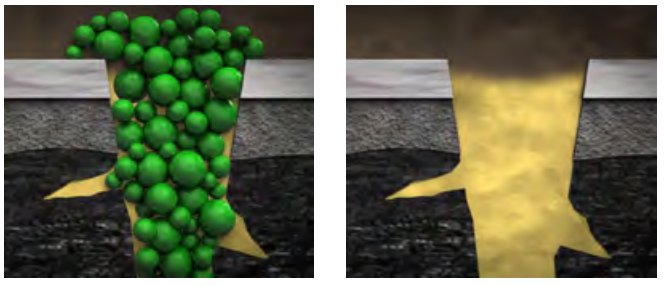
AccessFrac® service can be used to achieve diversion within the fracture network to create additional fractures and connect with natural fractures. This results in increased stimulated reservoir volume.

Unique Biodegradable Diverter Technology

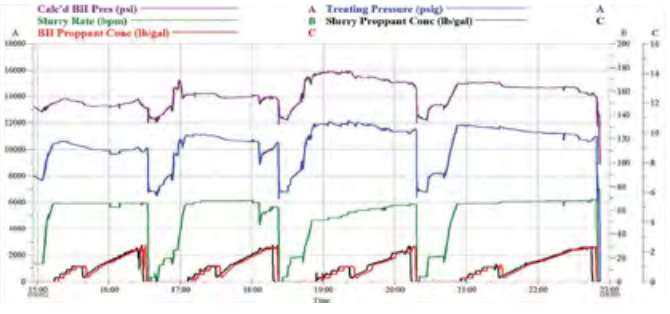
AccessFrac® uses temporary diverting agents including BioVert® agent. This biodegradable material provides effective diversion by sealing perforations and then dissolving, leaving the perforations, fracture and wellbore open.

The diverting agent can be used to provide temporary isolation of newly stimulated perforation clusters within the treatment interval. The perforations receiving the early fluid and proppant volumes can be temporarily isolated, diverting further treatment to additional sets of perforations.

The diverting agents can be tailored to provide diversion at the fracture and diversion inside the fracture network itself.



AccessFrac® service uses the industry's first biodegradable diverting *material able to withstand the rigors of fracturing and then completely dissolving.*



AccessFrac® PD service combined multiple stages, eliminating several packers and the time needed for setting and milling. Pressure responses clearly show effective diversion.

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ENERGY COOPERATION

EL MOLLA, FAYAD DISCUSS ARRANGEMENTS FOR NATURAL GAS DELIVERY TO LEBANON

Tarek El Molla, met with Walid Fayad, the Lebanese Minister of Energy and Water, who is currently visiting Cairo, the Egyptian ministry said in a statement.

The meeting emphasized Egypt's commitment and readiness to pump natural gas to Lebanon immediately upon completion of the procedures related to the start of exporting Egyptian gas and receiving it in Lebanese territory.

El Molla highlighted Egypt's permanent readiness to provide all aspects of support, assistance and expertise to the Lebanese brothers in various petroleum activities within the framework of the strong relations and ties that unite the two countries and the continuous support of the political leadership for relations with Lebanon.

EL MOLLA DISCUSSES DIGITALIZATION OPPORTUNITIES IN EGYPTIAN PETROLEUM SECTOR WITH NOKIA

The Minister of Petroleum and Mineral Resources, Tarek El Molla, has met with the Ambassador of Finland to Egypt Pekka Konsen and officials from Nokia Egypt to explore the available opportunities for cooperation on digitalizing petroleum and mining sectors in Egypt.

The two parties agreed to conduct two workshops to identify possible cooperation opportunities within the petroleum and mining sectors.

El Molla pointed to the importance of the digitalization strategy, which started in 2016 in the petroleum sector. He confirmed the desire of the petroleum sector to expand its partnerships with leading international companies in this regard.

For his part, Konsen highlighted the significant technological solutions provided by Nokia, which apply international environmental standards. Nokia's officials highlighted the company's efficient contribution to digitizing the petroleum and mining sectors.

EGYPT, METHANEX DISCUSS LATEST DEVELOPMENTS OF OPERATIONAL SAFETY MANAGEMENT PROGRAM

Minister of Petroleum and Mineral Resources Tarek El Molla has received Brad Boyd, the Senior Vice President of Corporate Resources at Methanex Corporation, to discuss the latest updates on the operational safety management program, within the framework of the memorandum of understanding (MoU) that was signed between the Ministry and the company to cultivate operational safety management principles at Egyptian petroleum companies.

During the meeting, the two parties discussed the progress of building teams responsible for applying operational safety management systems affiliated with the companies' chairmen.

They also talked about the creation of an operational safety license which will make sure about the availability of the necessary studies related to operational safety.

EL MOLLA, ALKHORAYEF EXPLORE PETROLEUM COOPERATION OPPORTUNITIES, IMPROVING BROWNFIELDS

Minister of Petroleum and Mineral Resources Tarek El Molla has met with the CEO of AlKhorayef Group, Saad AlKhorayef to explore potential cooperation opportunities and enhance partnership in the petroleum industry.

El Molla affirmed that there are a lot of opportunities to optimize collaboration between petroleum sector and AlKhorayef Group as well as diversify mutual projects, especially with the need for more partnerships with the energy giants to increase production and developing capabilities during the current period.

Additionally, the minister praised the positive impact of the group's investments in the Egyptian petroleum sector during the past few years through providing electrical submersible pumps (ESP)

ENERGY TRANSITION

EGYPT, BELGIUM EXPLORE OPPORTUNITIES FOR GREEN ENERGY PROJECTS

The Chairman of the Suez Canal Economic Zone (SCZone) Waleed Gamal El Din has met with a delegate from major Belgian companies interested in green energy projects implemented at the SCZone, including green hydrogen and ammonia projects.

Gamal Eldin explained the development operations in the zone's ports and its integration with the industrial zones in addition to the establishment of the fuel tanks' platforms. For its part, the delegation expressed their pleasure in watching the SCZone achievements in the shadow of climate change and the efforts for emissions reduction.

TAQA ARABIA LAUNCHES LARGEST SOLAR POWER PLANT IN SHARM EL-SHEIKH

In line with Egypt's strategy towards expanding the use of clean energy, TAQA Power, a subsidiary of TAQA Arabia, the full-service energy and utility provider in Egypt, announced the commissioning of the largest solar power plant in Sharm El-Sheikh build on an area of 250,000 sqm and with a production capacity exceeding 42 GWh / year.

The project comes in line with Egypt's support represented by the Ministry of Electricity and Renewable Energy, the Governorate of South Sinai for energy projects developed by the private sector.

"For more than 25 years, TAQA Arabia has been a distinguished national operator and one stop shop for all energy needs. The company has always been a first mover and is the first national company to commercially operate its plot in the massive project of Benban. This has had a vital economic outcome and contributed significantly to strengthening Egypt's steps towards the transition to clean energy," Executive Chairman of TAQA Arabia, Khaled Abu Bakr, stated.

PRODUCTION

EGYPT'S PETROCHEMICAL OUTPUT EXCEEDS 4.3M TONS IN 2021/22

Local production of petrochemicals exceeded 4.3 million tons annually in fiscal year (FY) 2021/22, which doubled from around 2.1 million tons produced in 2015/16, the Egyptian Petrochemicals Holding Company's (ECHEM) Chairman Saad Helal stated, indicating that the company's total revenues during the year increased by 85% to reach over EGP 3.3 billion.

Helal's statement came during the general assembly chaired by Minister of Petroleum and Mineral Resources Tarek El Molla to review the company's performance in FY 2021/22.

During the general assembly, Helal reviewed the performance indicators for the Egyptian petrochemical industry during 2021/22, which witnessed a remarkable development in the implementation and development of petrochemical projects. The projects aim to produce basic petrochemical materials through the expansion of existing companies, in addition to diversifying production with specialized petrochemical products with added value. These products will be produced locally for the first time from projects under implementation and promotion instead of importing to meet part of the local market demands and export to international markets as well as developing and integrating production units in petrochemical companies.

GANOPE'S OIL PRODUCTION INCREASES BY 10% IN FY 2021/22

The Chairman of South Valley Egyptian Petroleum Holding Company (Ganope) Nael Darwish announced that his company succeeded in increasing its reserves by adding 15 million barrels during fiscal year (FY) 2020/21 to reach its current average production of 23,000 barrels of crude oil per day (bbl/d) which increased by 10% from last year, in addition to 4.5 million cubic feet of natural gas and 8,300 tons of butane.

Darwish said that during the general assembly meeting of the company to approve its operational results for FY 2021/22 in attendance of the Minister of Petroleum and Mineral Resources Tarek El Molla.

The chairman added that the company was able to cover the needs of the southern governorates from the petroleum products which reached 6 million tons after increasing by 12% compared to the previous year.

UOG RECORDS AVERAGE PRODUCTION OF 1,552 BOE/D IN H1 2022

United Oil and Gas Company (UOG) has recorded net average oil and gas production of 1,552 barrels of oil equivalent per day (boe/d) during H1 of 2022.

Additionally, the company achieved revenues worth $9.8 million in H1 of 2022. The statement elaborated that this revenue was generated from its owned interest in the Abu Sennan concession in Egypt.

UOG said that its gas narrowed its full-year 2022 average group working interest production guidance to 1,450 – 1,500 boe/d (vs 1,500-1,650 boe/d previously guided) due to rescheduling of the 2022 drilling program in order to incorporate the results of seismic reprocessing prior to drilling the high impact ASH-4 development well which has now commenced drilling.

MIDOR EXPANSIONS TO RAISE REFINERY'S CAPACITY BY 60%

The Middle East Oil Refinery (MIDOR) expansion project in Alexandria is one of the important projects to increase refining capacity and provide petroleum products with the highest quality specifications that meet the needs of the local market, Minister of Petroleum and Mineral Resources Tarek El Molla said.

The expansion project will enhance its role as one of the important tributaries to feed the local market with its needs. The project will raise the current production capacity of the refinery by 60% to reach 160,000 barrels per day, El Molla added.

El Molla's remarks came during the Board of Directors meeting chaired by the minister to follow-up on the work of increasing the production capacity of the refinery.

NATURAL GAS

PETROTRADE OFFERS NEW TECHNOLOGIES FOR NATURAL GAS SERVICES

As part of the petroleum sector's digitalization strategy, PetroTrade has provided new electronic machines to facilitate all natural gas services which will be available all over the country.

According to a statement from the Ministry of Petroleum and Mineral Resources, the new machines will be available at all fuel stations such as Gastec, Cargas and Chillout, in addition to some shopping malls and clubs as well as Ain Shams University.

Waseem Wahdan, the chairman of PetroTrade, said that the first phase will involve 15 electronic machines and that they are choosing the best locations for installing them to cover the entire geographic working area of the company to implement all required services 24/7 without being stopped.

EL MOLLA INAUGURATES TWO NEW NATURAL GAS FUELING STATIONS IN NASR CITY, NEW CAIRO

Minister of Petroleum and Mineral Resources Tarek El Molla inaugurated the two new gas stations, the Cargas/Wataniya station in Nasr City's Al-Waha district and the Cargas/COOP station in New Cairo's Fifth Settlement, the ministry said in a statement.

The two stations are part of a plan to spread natural gas supply stations as fuel, which is being implemented by the ministry to increase the number of beneficiaries of this civilized and economic service.

The two stations come in support of the development and urbanization efforts in the two regions and two new pillars within the chain of stations supplying natural gas as fuel, which has been tripled from what it was at the end of 2020, to contribute to the increase in the number of cars converted to work with natural gas as a locally available and economical fuel, in addition to its being equivalent to the highest consumption of benzene in terms of octane number, El Molla stated.

INVESTMENTS

EL MOLLA, KUFPEC DISCUSS COMPANY ACTIVITIES, INVESTMENTS IN EGYPT

Minister of Petroleum and Mineral Resources Tarek El Molla met with Kuwaiti Ambassador in Cairo Ghanem Saqer Al-Ghanem and Mohammed Al Sarhan, the Kuwait Foreign Petroleum Exploration Company's (KUFPEC) Country Manager in Egypt, to discuss the company's activities and investments in oil and gas production.

The talks specifically focused on the company's petroleum activities and investments in fields in the Gulf of Suez, the Western Desert and the Mediterranean. The discussion tackled ways to strengthen them during the coming period, especially in light of the successes achieved by the company in the Gulf of Suez in the Geisum and Tawila concession area, in addition to the existence of promising opportunities in the Ras Kanayes concession area in the Western desert.

EL MOLLA CALLS FOR FUNDING TO DEVELOP EAST MEDITERRANEAN GAS RESOURCES

Tarek El Molla, referred to the East Mediterranean Gas Forum (EMGF) as an opportunity to promote economic growth and expand relations with Europe in the energy field. The minister also stressed that the tripartite memorandum of understanding signed in Cairo for the strategic partnership with the European Union is one of the important achievements of this forum.

El Molla's remarks came during the ministerial meeting of the EMGF Conference for Energy Transition, inaugurated by Cypriot President Nicos Anastasiades in the Cypriot capital, Nicosia.

El Molla stressed the importance of securing funding from major international financial institutions to accelerate the development of natural gas resources and reserves in the Eastern Mediterranean and motivate investors and international companies operating in the region.

He pointed out that Egypt is the only country in the region that has an infrastructure to export natural gas from pipelines and natural gas liquefaction plants.

TOTALENERGIES

TOTALENERGIES SELLS ITS 18% STAKE IN IRAQ'S SARSANG OIL FIELD

TotalEnergies has completed the sale of its 18% stake in the onshore Sarsang oil field in Iraqi Kurdistan for $155 million to ShaMaran Petroleum Corp, a company listed in Canada and Sweden that specializes in oil exploration and production in Kurdistan.

Depending on future output and oil prices, an extra contingent consideration of $15 million will be due.

2011 saw the discovery of the Sarsang field, which is currently controlled by HKN (62%), with KRG holding a 20% stake. In 2021, TotalEnergies contributed about 3,500 barrels per day to output.

In Iraq, TotalEnergies started its activities in the 1920s with the discovery of Kirkuk field. The company currently has a 22.5% interest in the Halfaya oil field. The company's production in Iraq is about 14 000 boe per day in 2021.

PETROFAC

PETROFAC, OHC SIGN MOU TO DEVELOP OMAN'S GREEN HYDROGEN CAPABILITIES

A memorandum of understanding (MoU) between Petrofac and the Oman Hydrogen Centre (OHC) has been signed, outlining how the two parties will work together to develop Oman's renewable energy sector's capacity, particularly in the area of green hydrogen.

OHC is the first research facility of its kind in the Sultanate and is situated at the German University of Technology (GUtech). It aids the nation in speeding the switch to renewable energy. In line with Oman Vision 2040, the center serves as a global hub for research, technology, education, industry applications, and the economy.

In addition to numerous studies for small-scale industrial users around the world, Petrofac recently finished front-end engineering design (FEED) for large-scale green hydrogen production facilities. This company has a growing track record of supporting new energy projects across a wide range of technologies.

ADNOC

ADNOC REFINING SET TO FINISH FIRST PHASE OF WASTE HEAT RECOVERY PROJECT

The first stage of ADNOC Refining's ground-breaking Waste Heat Recovery project at the General Utilities Plant in Ruwais, Abu Dhabi, is about to be finished.

According to the UAE's Net Zero by 2050 Strategic Initiative, ADNOC produces some of the least carbon-intensive petroleum in the world and is further aiming to reduce its greenhouse gas (GHG) emissions intensity by 25% by 2030.

The Waste Heat Recovery project is one of several strategic initiatives to decarbonize ADNOC's operations and builds on the company's heritage of responsible environmental stewardship. This includes significant accomplishments like the establishment of the region's first commercial-scale Carbon Capture and Underground Storage facility in 2016 and the adoption of a zero regular gas flaring policy in the early 2000s.

NAFTOGAZ

NAFTOGAZ PRODUCTION TO RECOVER AS UKRAINE ACHIEVES MILITARY GAINS

After gas production at Ukraine's Naftogaz took a 2% dip between January and August due to the Russian invasion, the company's CEO Yuriy Vitrenko indicated that he planned to restore production as a result of the Ukrainian military's recent victories, Reuters reported.

The majority of Ukrainian gas is produced by Naftogaz, which will produce 13.7 billion cubic meters of gas in 2021. The Poltava and Kharkiv regions, which have practically been liberated by recent counteroffensives, are where the majority of the gas resources are found.

ENI

ENI, ADNOC WORK TO POSITIVELY CONTRIBUTE TO GLOBAL GAS SUPPLY SECURITY

In order to accelerate the existing development project and time-to-market of new exploratory technologies, Abu Dhabi National Oil Company (ADNOC) Managing Director and Group CEO Sultan Ahmed El Jaber and Eni CEO Claudio Descalzi met in Abu Dhabi to discuss the company's activities in the Emirate of Abu Dhabi, future projects, and areas of common interest and collaboration.

Descalzi and Al Jaber, also the UAE's Minister of Industry and Advanced Technology, talked about advancing the high-profile Ghasha project. The project is anticipated to provide more than 1.5 billion cubic feet of gas per day, as well as more than 120,000 barrels of highly valuable oil and condensate, and it is projected to contain a considerable amount of recoverable gas.

CHEVRON

CHEVRON GRANTED INTEREST IN THREE PERMITS FOR CCS PROJECTS OFFSHORE AUSTRALIA

Chevron Corporation is a partner in three joint ventures that have been given an interest in three greenhouse gas assessment licenses offshore Australia through its affiliate Chevron Australia Pty Ltd.

The blocks, which include three in the Carnarvon Basin off the coast of Western Australia's north-west and one in the Bonaparte Basin off the coast of the Northern Territory, have a combined area greater than Belgium of more than 31,500 km2.

Chevron is concentrating on carbon capture, utilization, and storage (CCUS), largely through hubs with third-party emitters as partners and consumers, renewable fuels, hydrogen, offsets, and other cutting-edge technologies as part of its global reduced carbon strategy.

CHARIOT

CHARIOT, MOROCCO INK PIPELINE TIE-IN AGREEMENT

In order to gain access to the significant Maghreb Europe Gas Pipeline (GME) in Morocco, Chariot Limited, the transitional energy firm with an emphasis on Africa, has signed a Pipeline Tie-In Agreement with the Office National des Hydrocarbures et des Mines ("ONHYM"). The GME, which is owned and controlled by ONHYM, extends from eastern Morocco through Tangier in the north and then over to Spain.

This arrangement will make it possible for the gas generated by the Anchois Gas Project, located off the coast of Morocco, to be transferred via the GME to several potential off takers.

CONOCOPHILLIPS

CONOCOPHILLIPS, JERA OFFERING TO DEVELOP U.S. HYDROGEN GAS PLANT

ConocoPhillips, one of the biggest independent oil producers in the United States, will supply natural gas and oversee a carbon capture and storage facility for a proposed U.S. hydrogen gas project that will be developed in collaboration with Japan's biggest utility JERA, Reuters reported based on the companies' statements.

Natural gas producers now have a new market opportunity thanks to the agreement to supply gas for hydrogen, a potentially clean fuel for the generation of power. Conoco is one among several businesses that have long-term supply agreements in place with LNG producers who provide utilities.

According to JERA, the Japanese gas and electricity company that is in charge of the plant, a feasibility study to evaluate the hydrogen project might be finished by the end of the year. It seeks to create ammonia that can be exported and sold in the United States, Europe, and Asia by producing hydrogen from natural gas.

NIOC

NIOC TO ALLOCATE $100M FOR LPG EXPORT TERMINAL CONSTRUCTION

Iran will use $100 million in foreign direct investments (FDI) to build a liquefied petroleum gas (LPG) export terminal, according to the CEO of the National Iranian Oil Company (NIOC) Mohsen Khojastehmehr.

Khojastehmehr elaborated that one of NIOC's top aims during the Raisi administration is to maximize LPG export through liquefaction, adding: "In this regard, we found it necessary to strengthen a private company, and the powerful Petrosanat Iranian Company entered this field."

QATARENERGY

QATARENERGY RENEWABLE SOLUTIONS, QAFCO TO CONSTRUCT AMMONIA-7 PROJECT

The Ammonia-7 Project, the first and largest blue ammonia project in the world, was approved for construction today by QatarEnergy's affiliates, QatarEnergy Renewable Solutions and Qatar Fertiliser Company (QAFCO).

The Ammonia-7 Project, which will be the largest such plant in the world with a capacity of 1.2 million tonnes per year of Blue Ammonia, has been established by a partnership between QatarEnergy Renewable Solutions and QAFCO. The new facility, which will be run by QAFCO as a part of its integrated facilities, will be situated in Mesaieed Industrial City (MIC) and is anticipated to begin operations in Q1 2026.

The news was made at a signing ceremony for the project contracts, which included the engineering, procurement, and construction (EPC) contract, that was conducted at QatarEnergy's headquarters in Doha. The EPC contract, worth roughly $1 billion USD, was given to a group led by ThyssenKrupp and Consolidated Contractors Company (CCC).

TAQA

EGYPT'S TAQA ARABIA, SAUDI NATURAL GAS DISTRIBUTION CO. SIGN GAS TRANSPORTATION SERVICES, NETWORKS MOU

Egypt's TAQA Arabia has inked a memorandum of understanding (MoU) with Saudi Arabia's Natural Gas Distribution Company to cooperate in developing and operating gas transportation services and gas networks.

This announcement was disclosed by Saudi Exchange (a subsidiary fully owned by Saudi Tadawul Group).

This MoU came as part of the Natural Gas Distribution Company's expansion plan as well as its efforts to improve and develop the company's profits.

MISR PETROLEUM

MISR PETROLEUM COMPANY, EPRI COOPERATE TO ISSUE VALIDITY CERTIFICATES FOR PETROLEUM TANKERS

Misr Petroleum Company's Chairman Mohamed Shaaban met with Mohamed Abdel Raouf, Chairman of the National Petrochemical Alliance, Head of the Engineering Inspection and the Issuance of Validity Certificates for Petroleum Tankers, and Vice Chairman of the Board of Directors of the Chemicals Services and Development Center (CSDC) at the Egyptian Petroleum Research Institute (EPRI).

The agreement aims to inspect vehicles transporting petroleum products such as gasoline, diesel, mazut and other materials for the company's transportation fleet and to issue certificates of validity after conducting engineering inspections by the EPRI using the latest robotic devices and equipment to ensure their suitability for transporting petroleum products in accordance with international codes and the Egyptian Standards and Quality Authority. This is in order to uphold the safety of transport fleets, public and private property, and the safety of lives and places of loading and unloading.

WINTERSHALL DEA, EGYPT
CELEBRATE PARTNERSHIP, COMMITMENT FOR A SUSTAINABLE FUTURE

BY SARAH SAMIR

To celebrate long-term partnerships in Egypt, Wintershall Dea held a delightful evening reception that gathered the company's partners and friends to celebrate the successful partnerships and to highlight their long-term commitment to Egypt. The celebration was held, under the auspices of the Ministry of Petroleum & Mineral Resources and the Embassy of the Federal Republic of Germany at the majestic Abdeen Palace in Cairo under the starry sky of October 11th. The event also celebrated 70 years of relations between Egypt and Germany, as well as almost 50 years of partnership between Wintershall Dea and Egypt.

The event started with an exciting tour of the royal Abdeen Palace. The celebration then showcased a short video on the successful history of Wintershall Dea, which reflected the deep-rooted Egyptian-German relationship and cooperation, especially in the hydrocarbon and energy sectors.

The talks held on the sidelines of the event accentuated Wintershall Dea's role as a leader in carbon capture and low-carbon solutions in Europe and North Africa.

Wintershall Dea: Committed Partnerships

Wintershall Dea has a long history in the Egyptian energy sector and has proven committed throughout the years. "We have been here since 1974, and since we started, the country has changed tremendously. For example, when we started in 1974, Egypt had only almost 35 million people, until today the population has easily tripled. Not only the population, but also the economy has grown tremendously to different disciplines attracting billions of dollars of investments in different industries, and this would have not been

"We as a government, our role is to make sure that we have the proper fiscal regime, proper legislative terms, and the right economic model with our partners."

Minister of Petroleum and Mineral Resources

Tarek El Molla

"I am very grateful that we are allowed to be a part of the Egyptian energy industry and our team feel extremely welcome in this country"

Wintershall Dea's CEO

Mario Mehren

possible without being fueled by energy," Sameh Sabry, Managing Director of Wintershall Dea Egypt said during his keynote speech.

Dawn Summers, Wintershall Dea COO highlighted Egypt's significance in the company's business. "We operate in many countries across the world and Egypt is one of those extremely important countries and has a special place and a very important place in our portfolio."

"For the past 50 years, almost everything has changed. One of the consistent things is our commitment to this country," Sabry added.

Investment In Egypt's Energy

In a panel discussion under the title; 'Wintershall Dea and Egypt: Strong Partners for a Sustainable Future', Minister of Petroleum and Mineral Resources, Tarek El Molla, highlighted the Egyptian government's efforts to enhance investments climate and attract more investments to Egypt.

Wintershall Dea's CEO Mario Mehren; Frank Hartmann, Ambassador of Germany to Cairo; and Houda Allal, General Director of the Observatoire Méditerranéen de l'Energie (OME) also took part in the panel that explored German-Egytpian as well as regional energy partnership and the role companies like Wintershall Dea can play in the energy transition. The panel further highlighted Egypt's role as an regional energy hub.

"We as a government, our role is to make sure that we have the proper fiscal regime, proper legislative terms, and the right economic model with our partners," El Molla said, highlighting the importance of stability and security, stating that "this is something that everybody will see, the stability and the security for any investor to be happy. I think that all expats here are enjoying their stay here in Egypt and they love being here," El Molla said.

El Molla recalled some issues that Egypt faced due to gas shortages in the past, pointing out how Egypt worked day and night to overcome these challenges and to ensure energy security. "To do that we needed to make sure that we conveyed the proper message to our partners because we cannot deliver without the support of our partners," El Molla noted.

The minister referred to the importance of border demarcation processes with neighboring countries and the formation of regional and international strategic relations based on trust and mutual benefit, whether within the framework of the East Mediterranean Gas Forum (EMGF) or outside it. El Molla insisted that the system of cooperation and integration between petroleum sector companies and foreign companies resulted in the implementation of large projects. In the field of research and exploration, 108 agreements have been signed with a minimum investment of $22 billion over the last 8 years.

Egypt has been a committed partner to its business and investments, which earned the energy companies' trust in the sector. "We have been able to demonstrate to the world that we can be reliable, and not only that this country and this industry is worth investing in and worth putting hand in hand together for the growth, " El Molla noted.

Mehren expressed Wintershall Dea's interest in the Egyptian energy and hydrocarbon sectors. "I am very grateful that we are allowed to be a part of the Egyptian energy industry and our team feel extremely welcome in this country," Mehren stated.

We have a long and successfull history as a reliable partner for Egypt's energy sector. Today with a clear focus on natural gas, produced in the most efficient and responsible way. And we are looking ahead to a future, where we are delivering low-carbon hydrogen and Carbon Capture and Storage projects at scale. In this regard, we have signed an Memorandum of Understanding with our trusted Egyptian partner EGAS this year."

Energy Security in Germany

The German and Arab leaders discussed natural gas supply to Europe. Germany plans to diversify its energy mix over time. As part of its sustainability plans, Germany looks forward to increasing gas contribution in their energy mix "from 38%, doubling to 80% of the energy mix. This is due to be realized until 2030," Hartmann stated.

The Ambassador explained that Germany has been working to secure the gas supply for this year, expecting that with the agreements with Egypt, Israel, and the European Union (EU), "the supply will be there, but the prices have exploded," adding that "the government is trying to compensate heavily the exploding gas prices by subsidies to the consumers and also to the industry."

Carbon Management for Future

The panel was in agreement of the significance of carbon management plans and sustainability strategies, showcasing the energy and hydrocarbon sectors' efforts toward energy transition.

❝ Security of supply of energy and achieving our climate goals are extremely important and Wintershall Dea is focused on ensuring that we are part of the solution, and also deliver on a sustainable future for our economies, our communities, and for the future of our industry. ❞

Wintershall Dea COO

Dawn Summers

❝ We all know that we are looking to the upcoming COP27, and to be honest bilaterally heavily working in contributing our technology in the new fields of green hydrogen and the huge projects, a few people around here this evening are highly engaged in these projects in cooperation with the Ministry of Petroleum. ❞

Ambassador of Germany to Cairo

Frank Hartmann

> *For the past 50 years, almost everything has changed. One of the consistent things is our commitment to this country,*

Managing Director of Wintershall Dea Egypt

Sameh Sabry

> *COP27 is a chance for our region, but it's happening even in this difficult moment and it is important to (not only) bring the voices of the realists, but also the optimists,*

General Director of the Observatoire Méditerranéen de l'Energie (OME)

Houda Allal

Hartmann talked about the energy transition, pointing out that "for the industries that are highly affected, you cannot switch from gas to renewables in the petrochemical business, that is impossible," and that "gas will be needed in the future, and we cannot only want to transform to renewables."

He stated that Egypt and Germany are keen to cooperate to achieve energy sustainability. "Sustainable energy is at the heart of our cooperation, with the German companies, and also the German government, we did contribute a lot in the last 25 years in the field of energy going back even to the Aswan Dam and the Turbines in the 1950th and later on to Assiut Dam and many other examples. We are entering a new technological era and we want to contribute. I think our companies and namely Wintershall Dea, are positioned to contribute a lot technologically to make Egypt a successful country in the energy transition, which is due to come," Hartmann explained.

In her keynote Summers highlighted Wintershall Dea's insights on energy transition. "Security of supply of energy and achieving our climate goals are extremely important and Wintershall Dea is absolutely focused on ensuring that we are part of the solution, and also deliver on a sustainable future for our economies, our communities, and for the future of our industry."

COP27: A Chance for Cooperation

Looking forward for cooperation and new partnerships for carbon management and clean energy, Egypt is hosting the 27th climate summit (COP 27) in Sharm El Sheikh City in November. "COP27 is a chance for our region, but it's happening even in this difficult moment and it is important to (not only) bring the voices of the realists, but also the optimists," Allal stated.

Germany is also excited to participate in the climate summit and to offer its technology for a green prosperous future. "We all know that we are looking to the upcoming COP27, and we are also bilaterally heavily working in contributing our technology into the new fields of green hydrogen and the huge projects, a few people around here this evening are highly engaged in these projects in cooperation with the Ministry of Petroleum, and also the Ministry of Electricity," Hartman noted.

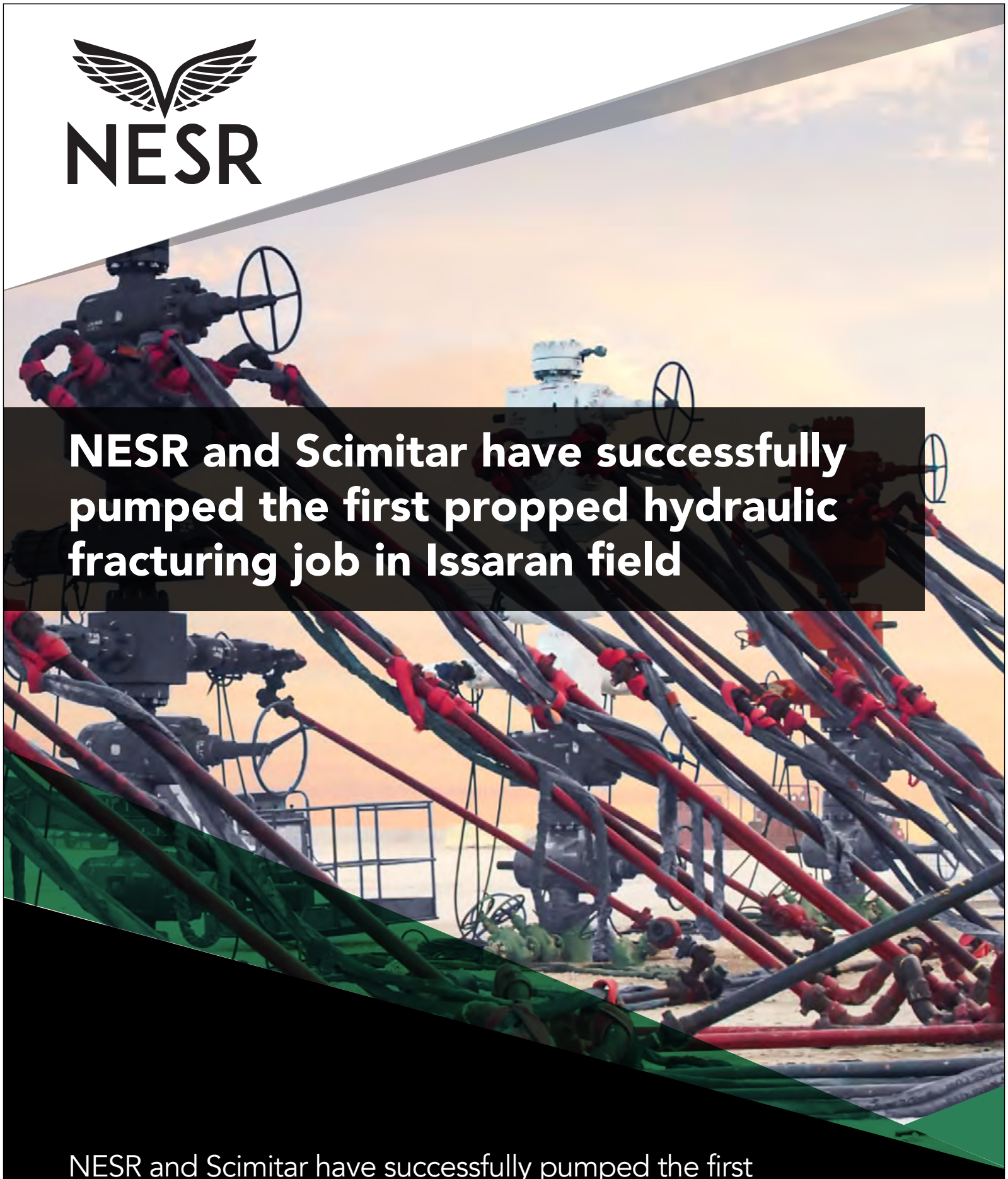
Letter of Intent

At the end of the event, the celebration was crowned by Sabry signing a letter of intent (LoI) with Magdy Galal, Chairman of the Egyptian Natural Gas Holding Company (EGAS). The LoI reflects Wintershall Dea's commitment to decarbonization and how it supports Egypt in its carbon management plans.

The signed LoI aims to significantly reduce operational greenhouse gas emissions at the Disouq concession, using the company's expertise, such as the methane Leak Detection and Repair Program (LDAR) in Egypt, to achieve this goal. This comes as Wintershall Dea works hand in hand with Egypt to identify low-carbon energy projects for a green future.

The LoI fits within the Ministry of Petroleum's efforts in cooperation with its entities and global partners, as well as all elements of the Egyptian oil and gas industry, to enhance production activities, curb and control carbon emissions, as well as economic exploitation of flare gas.

The celebration ended with fine music by the Egyptian-German band Cairo-Steps, performing a concert in the outdoor garden of the magnificent Abdeen Palace. The event was a great occasion for not only confirming, but also renewing the promise for committing to the mutual goals for a better zero-carbon future.



NESR and Scimitar have successfully pumped the first propped hydraulic fracturing job in Issaran field which is an ultra-shallow carbonate reservoir with heavy oil. Steam was injected in well post treatment and the well has shown great potential in terms of production thus unlocking the reservoir's true potential.

www.nesr.com

Egypt's International Partnerships

IN THE GREEN TRANSITION

BY JOLLY MONSEF, MARIAM AHMED & YOUSTINA MOUNIR

Egypt is committed to doing its part in the green transition, in line with the Sustainable Development Goals (SDGs) and the national agenda. To revive green growth, Egypt takes a series of steps to move forward through public-private dialogue and international cooperation in order to ensure that the green national priorities and objectives are met.

Egyptian Energy Strategy 2035

In 2016, the Egyptian Supreme Council of Energy approved the 2035 Integrated Sustainable Energy Strategy (ISES), which aims to achieve the required energy balance in Egypt. Through the ISES, the contribution of renewable energy in electricity generation is expected to increase to reach 42% by 2035.

According to New and Renewable Energy Authority (NREA), the council approved electricity production in 2035 plan as follows:

ELECTRICITY PRODUCTION IN 2035 (%)

3	42	55
Nuclear Energy	Renewable Energy	Thermal Power Plantsy

RENEWABLES ENERGY SHARE (%)

26	14	2
Solar	Wind	Hydroelectricity

International Partnerships and Programs

1. Within Energy Sector

Egypt is seeking partnerships with international agencies, institutions and banks to enhance its energy transition journey to ensure energy security and expand the implementation of renewable energy sources.

THE EGYPTIAN-DANISH ENERGY PARTNERSHIP PROGRAM AGREEMENT

Parties	Date	Duration	Aim
Minister of International Cooperation & Minister of Electricity and Renewable Energy with the Energy Agency of the Danish Ministry of Climate, Energy and Utilities	August 29, 2022	3 Years (2019-2022)	- Unlock Egypt's Green Transformation - Invest in Renewable Energy to Achieve a Clean Energy Revolution

AFD* GROUP TO PROMOTE RENEWABLES ENERGY IN EGYPT

Loan Value	€815 million
During	Almost 10 Years
Aim	- Financing Renewable Energy Projects - Strengthening the Electricity Transmission Network

*The Agence Française de Développement

EIB RENEWABLE ENERGY PROJECTS IN EGYPT

No. of Projects	Total Signed Amount
11	€2.25 billion

EBRD'S FUNDING FOR ENERGY PROJECTS IN EGYPT SINCE 2017

Finance Value

Aim

$500 million

Supporting the development of private renewable energy projects under the Egyptian government's feed-in-tariff (FIT) program

EBRD'S FINANCED RENEWABLE ENERGY PROJECTS SINCE 2020

Title	Finance ($ million)
August 2020 Kom Ombo	54
December 2020 Kom Ombo EBL	14
February 2022 Scatec Green Bond Egypt	Up to 130
March 2022 Intro Sustainable Resources	4.8

EGYPT, JICA PARTNERSHIPS

Cooperation to Promote Energy Efficiency

Other Parties
The AFDB and the AFD

Launch Date
February 2021

Loan Value
¥25 billion

Aim
Supporting sustainability in the Egyptian power sector & promoting energy efficiency.

Inauguration of The Center of Excellence for Energy Efficiency and Operational Performance

Inauguration Date
October 24, 2022

Aim
- Achieving energy efficiency for decarbonization projects
- Switching to low-carbon energy sources
- Achieving a continuous reduction in the operating cost and carbon footprint of the sector

2. Within Climate Change Adaption

Egypt plays a vital role with regards to the international movements related to climate change issues. Such a role began with the 2015 Paris Agreement Summit where Egypt's nationally implemented projects, such as energy, renewable energy, solid waste, and sewage, deal closely with adaptation and climate change, which are very important themes across the globe.

WORLD BANK'S MAJOR PROJECTS AGAINST CLIMATE CHANGE IN EGYPT

September 2020	$200 million	Greater Cairo Air Pollution Management and Climate Change Project	
March 2021	$681 million	Railway Improvement and Safety for Egypt Project	The project supports the low-carbon transport to enhance achieving Egypt's goals of climate change adaptation. So It will contribute to a shift to greener public transport.
September 2016	$500 million	Upper Egypt Local Development Program	The program provides policies to enhance solid waste management, conduct climate risk assessments, and develop local climate action plans to address risks.

IFC'S GREEN BOND ISSUANCE PROGRAM

Issuance Date: **August 2021**

Aim: Supporting climate finance and green growth through investing in Egypt's first private sector green bond

Investment Value: **$100 million**

EBRD, EU, AND GCF PROGRAM

Program's Title: **Green Value Chain**

Launch Date: **November 2020**

Aim: Financing private small and medium-sized enterprises (SMEs) to invest in advanced technologies and climate mitigation

Program's Finance Value: **€70 million**

GIZ* PROGRAM IN EGYPT

Egyptian-German Joint Committee on Renewable Energy, Energy Efficiency and Environmental Protection (JCEE)

Aim	Beneficiary	Commissioned by	Total Grant
- Reducing the Greenhouse Gas intensity - Improving energy efficiency and climate adaptation in Egypt	Ministry of Electricity and Renewable Energy	German Federal Ministry for Economic Cooperation and Development (BMZ)	€15.5 million

*Deutsche Gesellschaft für Internationale Zusammenarbeit's

UK, ADB MUTUAL GUARANTEE AGREEMENT

Aim: Boosting climate change finance across Africa, with a portion of this committed to Egypt

Finance Value: Up to **$2 billion**

Major Energy Projects in Egypt

There is a current trend toward eco-friendly projects in order to achieve the sustainable development goals (SDGs) set by the United Nations (UN). Ahead of COP 27, Egypt is launching various renewable energy projects including both solar energy and wind plants. Moreover, Egypt has taken serious steps towards green projects by considering expanding the use of green hydrogen and ammonia.

1. Green Projects

Egypt launched the transition to the green economy strategy within the framework of achieving sustainable development and implementing the Egypt 2030 vision. The strategy aims to create effective opportunities and partnerships between the parties those interested in achieving sustainable development in Egypt and giving a push towards green economy. The country is currently upgrading its Egypt 2030 vision under the theme of green recovery.

GREEN PROJECTS COST IN FY 2022/23 PLAN

EGP 336 billion

Sector	Cost ($ billion)
Electricity	2.4
Irrigation	26.4
Transportation	300
Housing	4.5
Local Development	2.8

GREEN HYDROGEN, FUEL & AMMONIA PROJECTS

16
Signed MoUs Until September 2022

> 20
No. of Companies

> $20 billion
Total Investment Cost

2. Renewable Energy Projects

Egypt enjoys an abundance of land, hydropower, wind and solar; making it a prime location for renewable energy projects. Egypt pays attention by attracting more investments in renewables energy and the clean energy sector to get the most benefits.

FDI in Renewable Energy during 2022

Value	Expected Capacity
$4.4 billion	3,500 MW

	WIND ENERGY SECTOR	SOLAR ENERGY SECTOR
Projects	7	8
Total Capacity (MW)	>3,775	>2,933
Location	Gulf of Suez & West of Nile	Kom Ombo & West of Nile

HYDROELECTRICITY SECTOR

Hydroelectricity Plants

6

Location

High Dam, Aswan, Esna, Naga Hammadi, Assiut

Hydroelectricity Generation in 2021

14.6 TWh

Fostering sustainable development, combating climate change as well as ensuring energy security and a balanced green transition have become priorities in Egypt's Strategy for 2035. In this regard, Egypt spares no efforts in implementing new energy projects, in addition to enhancing international partnerships in the green transition field to benefit from the technical and financial support.

MITIGATION OF EMISSIONS – **DECARBONIZATION STRATEGIES**

BY RANA AL KADY

Oil and gas firms, clearly, have a more difficult route to decarbonization. All the same, their involvement in climate change mitigation is equally important. In fact, both investors and customers are holding them responsible for their actions.

The oil and gas business is undergoing a transition unlike any other. In contrast to earlier industrial upheavals, the decarbonization transition will usher in a whole new set of laws, problems, and possibilities. The race to decarbonization has begun, fueled primarily by consumer expectations for an alternative energy system and shareholder demands for consistent environmental, social, and governance (ESG) outcomes. To maintain its ability to operate during and after the transition to a low-carbon/net-zero energy system, the sector has set high emissions-related objectives. They should, after all. A few of businesses have already taken strong steps.

GENERAL OVERVIEW

First of all, there is no one sure-fire way to mitigate harmful emissions in the oil and gas industry. Decarbonization measures are possible to implement, but it requires a balance of stringent policies and/or legal frameworks to carry out efficient strategies.

Even as the upstream oil and gas businesses face an exceedingly challenging approaching economic climate, they face a greater dilemma: increasing demand from authorities, investors, and other stakeholders to decarbonize their activities. Several upstream firms have already achieved significant decarbonization progress. However, as stakeholder requirements and expectations continue to climb, they will have to accomplish a lot more in the future.

CRUCIAL STRATEGIES

In fact, it is proposed that the mitigation of emissions in the oil and gas industry may be accomplished by a mixture of increased energy efficiency of technologies and processes, a shift to green power alternatives, an emphasis on less energy-consuming oil extraction, and Carbon Capture, Utilization, and Storage (CCUS). As suggested by an industry expert in sustainable energy, "The future of CCUS in Egypt is possible, but we need to focus on efficient storage in reduce our emissions even from natural gas which is mistaken for a green source even though it is [considered to be] a transition source. One step at a time sustainable goals can be reached and with the help of CCUS if it is completed in a practical way."

Furthermore, since methane emissions from venting or inadequate flaring account for a major fraction of operational emissions, industry experts highly recommend using drones and guidance systems to directly quantify methane emissions. In the gas sector, the use of CCUS to offset operating emissions is now acceptable and reasonably cost-effective. If a corporation employs CCUS, the projected contribution of CCUS to attaining its net zero operating emissions objective should be disclosed.

Along the path to decarbonization, players in the energy industry have three options for action. Companies can reduce emissions and increase the effectiveness in existing operations, equipment, and value chains. Organizations may hasten the transition by replacing existing energy and consumption sources with cost-effective and cleaner, zero-emission options. They may also adopt and scale new sources of energy, techniques, and technologies that are financially and technically feasible today. In order to achieve success, a variation or mix of strategies must be carried out. De-risking the process is dependent on finding the proper balance over time.

CARBON OFFSETS

Since more oil and gas companies vow their endorsement for net zero, carbon offsetting is one technique the sector may utilize as part of a multi-pronged strategy to reduce overall emissions. Simply expressed, carbon offsetting involves balancing emissions from one cause (for example, emissions from gas flaring in hydrocarbons) by lowering emissions from some alternative sector by an equal quantity.

This might include investing in initiatives that utilize the power of ecological systems like plants and forests to remove GHGs from the atmosphere. An oil company, for example, may pay for another industry or company to cultivate sufficient plants to offset one barrel of oil. One technique that enables oil and gas producers to accomplish this is the purchase and sale of carbon offset certificates. These are fundamentally financial schemes that enable carbon polluters to acquire credits from organizations that cut or avoid GHG emissions.

Skeptics of carbon offset programs, in contrast, claim that they are merely a way for polluters to maintain polluting while feeling indifferent about it. They might argue that extracting oil from the ground and utilizing it to fuel automobiles produces the same amount of carbon emissions.

CONCLUSION

To conclude, advocates say that permitting emission-intensive sectors to acquire carbon credits allows for capital invested in sustainability programs such as renewable power or forestry rejuvenation that would normally go unfunded. It may be argued that it is critical for the global community to embrace a realistic, economically investable, action-oriented strategy to reducing emissions—all with a tight perspective on implementing the transition at scale. The clock is ticking. Organizations that act now will not only drive the decarbonization push toward 2050, but will also put themselves in a better position for long-term business potential.

EGYPT'S PATH TO A DECARBONIZED FUTURE

BY SARAH SAMIR

Egypt is one of the countries that will be significantly affected by climate change on several levels, including water scarcity, rising sea levels, and weather changes or heat waves. Therefore, it is crucial for the country to contribute to climate action and sustainable development plans adopted across the globe. Egypt is accelerating its decarbonization pace and working on energy diversification as the country is committed to its 'Sustainable Development Strategy: Egypt Vision 2030' and 'Integrated Sustainable Energy Strategy 2035', which were launched in 2015.

Decarbonizing Natural Gas

As a part of its sustainable development plans, Egypt works on various methods to ensure a brighter future. One of the efforts exerted includes decarbonizing natural gas. Several companies are interested in decarbonizing Egyptian natural gas. During the Egypt Petroleum Show (EGYPS 2022), which was held in February 2022, Egypt signed several memoranda of understanding (MoUs) for various projects related to decarbonization, especially the usage of hydrogen and low-carbon energy, studying carbon management, low-carbon hydrogen derivatives, such as ammonia, as well as oil and gas emissions sources. The companies involved in these MoUs included Shell, DNV, Schlumberger, and Worley.

Moreover, in the first half of October 2022, Egypt agreed with WIntershall Dea to explore carbon capture, storage, and utilization (CCUS) opportunities. Furthermore, Wintershall Dea signed a letter of intent with the Egyptian Natural Gas Holding Company (EGAS) to significantly reduce operational greenhouse gas emissions at the Disouq concession.

Flare Gas

On the other hand, Egypt is concerned about the wasted gas in the air. Egypt has been keen to work on its flare gas to ensure a safer environment. In October the Petroleum Safety & Environmental Services Company (Petrosafe), in cooperation with Baker Hughes, held a seminar titled "Integrated Solutions for Flare Gas Management and Monitoring the Flow Rate of Greenhouse Gases", which discussed a flare gas project.

The flare gas management and recovery project comes to implement strategic programs to develop and modernize the petroleum sector with the aim of raising the efficiency of the work of refineries and supporting the efficiency of energy use. The project is set to achieve a positive impact on the environmental and economic levels by reducing the emission of gases in the various petroleum sites.

Thanks to the projects implemented to capture gas flare, "Flaring is lower, by 26% compared to 2016," according to the study entitled 'Leadership on methane in Egypt: Recent successes and future opportunities in the lead-up to COP27' prepared by Capterio and the Clean Air Task Force. "Operators in Egypt have recently demonstrated that flare capture projects are commercially attractive at the scale of 10, 30, 50, and 150 million cubic meters per year," the study said.

However, Egypt still has space for development. By attracting more investments to the flare gas capturing plans, Egypt can increase projects. "Egypt's flaring, venting and leaking could be further reduced, annually adding up to 3.7 BCM of gas, up to $7 billion per year to the economy, whilst reducing emissions by up to 88 million CO2-equivalent tons," Capterio's study said.

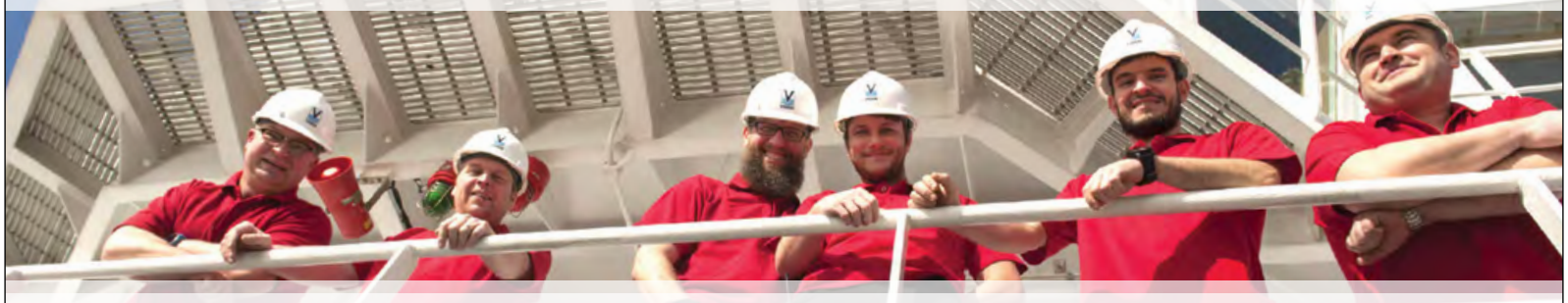
Green and Clean Energy

Egypt has been working on attracting investors to renewable energy generation. The country is keen to increase its generated energy from renewable sources, such as solar, wind, and hydro-power, as well as nuclear sources by 2035. By the targeted year, Egypt is set to produce 42% of its electricity from renewables, and 3% from nuclear power once the Dabaa plant is complete, according to an article by Seda Duygu Sever-Mehmetoglu from Hamad bin Khalifa University.

The Egyptian government is making several incentives to attract investments in renewables. "One notable fiscal policy tool is taxing, with the capital components of renewable energy being subject to a value-added tax (VAT) of only 5% instead of 14% according to the VAT law," Professor, Dalia M. Ibrahiem, said in an article entitled 'Renewable Energy in Egypt: Needs and Priorities'.

With these efforts, Egypt will successfully develop its electricity mix and decrease its emissions. Through decarbonizing its natural gas, capturing its flare gas, boosting its hydrogen production, and enhancing its renewable energy and nuclear industries. Accordingly, Egypt can be a significant contributor to the world's climate action and sustainable development paths.

"TOGETHER, YOUR PARTNERS IN EGYPT"



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ZERO FLARING:
ECONOMICS OF TURNING THE DREAM INTO A REALITY

BY NADER RAMADAN

Addressing the issue of gas flaring and methane emissions has become more essential than ever with natural gas being a leading transitional energy resource. Being a significant contribution to global carbon emissions, the total volume of natural gas flared worldwide was 142 billion cubic meters based on estimates from the World Bank's Global Gas Flaring Reduction Partnership (GGFR). Though this figure has declined significantly, the amount of gas that is flared globally remains sufficient to power Sub-Saharan Africa. Both flare gas and methane emissions that come from petroleum activities make up around 12% of greenhouse gas emissions within the global energy sector.

Yet, as global energy giants highlight the importance of achieving the zero-flaring dream, it will only remain a fantasy if the necessary financial resources are not secured. The economic approaches are many, but the few that are successful are the ones that give effective climate action the momentum that it needs to achieve net zero objectives. Most economic approaches have been successful in financing large-scale and small-scale projects to accomplish zero flaring, but fall short of addressing what experts call the "missing middle". This – in essence – is where true excellence in economic strategic planning is really required.

One component of an effective economic strategy must involve the creation of a healthy and secure investment climate to attract the trust and confidence of key investors that could set the foundations for successful flaring and methane reduction (FMR) projects. According to a World Bank report, sources of investment for FMR projects include oil and gas companies, commercial banks, private capital funds concerned with natural resources, development finance institutions (DFIs), and strategic investment funds. As far as oil and gas companies are concerned, the World Bank study has shown that though these companies have contributed a lot to global emissions, there is also a lot of potential for them to benefit from their investments in FMR projects and secure impressive returns. From an economic perspective, state policies should offer attractive incentives for oil and gas companies to invest in these types of projects and in providing necessary technologies to ensure their on-field operations are emissions-free.

Many of the world's large financial institutions, such as commercial banks, could also take interest in FMR projects given that the returns on investments look promising. Based on 2021 figures provided by Rain Forest Action, the biggest names in finance have been pumping funds into the fossil fuel industry, including JPMorgan Chase contributing $317 billion between 2016 and 2020, as well as $237 billion from Citi, $223 billion from Wells Fargo, and $121 billion from BNP Paribas among many others. A World Bank study indicated that many organizations in global finance would welcome the idea of investing and benefiting from the potentially profitable returns from FMR projects. By ensuring an environment of security and stability, these key financial institutions can help build the fiscal momentum to push the FMR agenda forward. Though the sources are many, it is also imperative to have a strategy that will cater to the diverse interests of these various investors.

There also needs to be policies to reduce risks for FMR investments and ensure investors that they will get an adequate return for their contributions. These risks include associated gas supply risks, end-product price risks, off-taker payment risks, project execution risks, and macroeconomic risks. From an economic perspective, supply is a key element to pay attention to, especially when it comes to associated gas supply risk. According to a World Bank study, uncertainty in the quantity and quality of associated gas could pose a potential risk to returns on FMR investments. This is especially the case if oil and gas companies are not diligent in keeping a record of their flaring activities, primarily due to ineffective regulation and enforcement. Additionally, investors may also have to face end-product price risks in that returns from FMR projects are affected by price fluctuations of end-products, mainly gas or electricity. The World Bank study also cites an additional macroeconomic risk saying, "FMR projects face a variety of macroeconomic risks, including those affecting oil companies. A significant drop in oil prices, for instance, may affect production at a given oil field and with it the supply of associated gas. Macroeconomic volatility may also affect prices and demand of the FMR project's end product." These are challenges that countries around the world will have to work around in order for their FMR initiatives to be successful.

Climate action, just like everything else, echoes the concept that dreams without funding remain to be nothing fantasies. Without sound economic policies to drive climate action and take the necessary measures to reduce emissions, humanity will have to face an overwhelming existential threat amid rapidly changing global weather patterns and rising temperatures. Zero flaring and cutting methane emissions is and will remain to be an essential part of climate action, with technological innovation and effectiveness going hand in hand to generate the much-needed results.

CCUS DEPLOYMENT:

THE WAY TO ZERO CARBON FUTURE

BY FATMA AHMED

New Technology is an effective way to develop solutions for carbon emissions reduction initiatives. Carbon sequestration is a good example in which carbon is kept in its solid or liquid forms and separated so that it does not harm the environment. Carbon Capture, Utilization, and Storage (CCUS) technologies are some of the most popular technologies used recently to mitigate carbon dioxide (CO_2) emissions.

Exploring CCUS: How It Works

According to an article published by the International Energy Agency (IEA), the CCUS refers to the capture of CO_2 from large point sources such as power generation or industrial facilities that use fossil fuels or biomass as fuel. Moreover, the article elaborated that CO_2 can be captured directly from the air and reused on-site. If it is not used in the same project, carbon can be compressed and transported through pipelines, ships, rail, or trucks to be used in other applications or injected into deep geological formations (including depleted oil and gas reservoirs or saline aquifers), which can keep the CO_2 for constant storage.

The latest IEA data showed that around 35 commercial facilities are applying CCUS to industrial processes, fuel transformation, and power generation with a total annual capture capacity of 45 megatons (Mt) of carbon. It added that there is an ambition for establishing over 200 new capture facilities to be operated by 2030, capturing over 220 Mt of carbon per year. There are three types of carbon capture technologies: pre-combustion capture, post-combustion, and oxyfuel combustion capture.

Carbon Capture Types

Pre-Combustion Capture is one of the capture technologies in which the fuel is split by heat into a mixture of hydrogen gas and carbon dioxide before combustion takes place. This is so that the hydrogen can be taken separately and used to produce energy without CO_2 spread. This type enables the capture, compression, and transportation of the remaining CO_2, according to an article posted on Energy Tracker. It is mainly applied in integrated gasification combined cycle (IGCC) plants. Its key benefits include high efficiency and being an easier method for carbon removal from fossil fuels than post-combustion.

Oxyfuel Combustion Capture is considered the most efficient carbon capture technology which can capture 100% of carbon emissions. However, it is the most expensive method and is very energy-intensive. This technology refers to the separation of pure oxygen from the air, according to the article published by Energy Tracker. Then, this oxygen is used to burn the fuel, generating carbon dioxide and water byproducts. After that, water is isolated using a condensation unit which allows the capture of the remaining CO_2.

Post-Combustion Capture refers to the removal of CO_2 from the fuel after combustion. This is done by capturing exhaust gases generated from burned fuel, then the CO_2 is separated by using a liquid solvent. After mixing with the liquid solvent, CO_2 is separated from the solvent by using a separation unit. This enables the transportation, storage, and utilization of the remaining CO_2. This method is the most common CCU technology and it can be easily installed in the existing power plants as well as is more energy intensive than the pre-combustion method.

CCU's Benefits and Applications in Oil & Gas

An article published by If Solutions stated some benefits of CCUS for the oil and gas industry. It mentioned that besides keeping the environment safe from harmful emissions, it can help to use the large volume of CO_2 generated from oil and gas industry operations as a cheap source of energy. CCUS also helps oil and gas operators to commit to the regulatory compliance which is required by global environmental bodies to reduce carbon emissions.

According to the article, CCUS has many applications in the oil and gas industry. The captured and stored carbon can be used by the operators as they can inject it into the natural gas formation to improve the pressure reduction and keep production rates. Also, CCUS can optimize ethanol production which is an important source of renewable fuel. Additionally, carbon capture technology allows the production of low-carbon hydrogen fuel which becomes essential in oil and gas operations.

THE ART OF AGREEMENTS, PETROLEUM CONTRACTS

Dr Salah Nour Eldin - Materials Department Head - Khalda Company

Agreements are concluded between two or more persons in public international law, and thus raise a case for international responsibility when there is a dispute.

As for contracts, they are concluded between two or more private law persons, and these contracts are often concluded between natural persons, and may include a foreign party, making them contracts of a special nature.

As for petroleum contracts, they are concluded between a national party (the state or one of its public institutions or bodies which enjoys legal personality) and a foreign party represented by a private foreign company belonging to a country other than the host country.

Therefore, these contracts are called by different names, including economic development contracts, quasi-international contracts, international investment contracts, and economic development agreements.

Petroleum contracts are contracts of a special mixed nature, which indicates that petroleum contracts are a compound legal act or of a dual nature. Therefore, we see that oil contracts are contracts of a special and exceptional nature.

Because petroleum contracts contain exceptional conditions that are not familiar in private law or in other contracts, such as conditions for legal stability and conditions of contractual stability.

The different legal forms of petroleum contracts varied, due to the diversity and difference in the legal relationship between oil-producing countries and foreign companies working in this field.

Conventional concession contracts were the first legal form that prevailed for a long period of time due to the nature of the political situation. It was considered a legalized depletion of natural resources in general and petroleum resources in particular. Where the host or donor country was in charge of concluding traditional petroleum concession contracts with foreign companies.

We can define the concession contract as the legal disposition according to which the host country grants the foreign company the absolute right to search and explore for the petroleum resources inherent in its territory or part of it, and the right to exploit these resources and wealth, and dispose of them within a specified period of time in return for the granting country obtaining certain financial returns.

We note that most of the concession contracts granted by developing countries to foreign companies have taken place in different situations in all respects, especially political and international ones. Therefore, the terms of these concessions were unfair to the interests of developing countries, as they were under colonialism.

In traditional franchise contracts, foreign oil companies were granted the absolute right to search and explore to discover and extract oil from the concession areas, as well as the right to transport the extracted oil. In addition, foreign companies had the right to own and dispose of the produced petroleum.

One famous example includes the oil concession contract concluded in 1901 between the Shah of Iran and the English millionaire (William Darcy), and it is the first oil concession contract concluded in the Middle East (for sixty years). This is in addition to the concession contract concluded between the Kingdom of Saudi Arabia and the Standard Oil Company of California in 1933 (one of the companies known as the Seven Sisters).The concession contract of Qatar Petroleum Company with the Sheikh of Qatar, concluded in 1925 (for a period of 75 years) would be yet another example. The Egyptian concession contracts were distinguished from other countries, especially in terms of the time period (30 years, renewable for 15 years).

There are some restrictions on the right of a foreign party to own the petroleum produced from it: (1) that the donor country takes certain quantities free of charge from the oil produced, (2) paying a royalty to the host country, which is represented in a certain percentage of the produced petroleum and its derivatives, (3) not to sell any petroleum products to any foreign authority hostile or unfriendly to the donor country.

When it comes to the issue of finances, there are several types of financial payments. Royalty is cash or in-kind payments that the concessionaire company is obligated to pay to the contracting state for each oil production unit it obtains. Rent value is a sum of money to be paid annually in return for the foreign company's use of the surface of the land covered by the concession. Finally, a Signature bonus is a sum of money obtained by the state from the foreign company as soon as the contract is concluded.

But we must know that the financial returns obtained by the host country are very small compared to the fantastic profits achieved by foreign companies.

The traditional concession contracts did not provide any opportunity for the producing countries to participate in exploiting their latent oil wealth in their territories. These contracts were sufficient charters in and of themselves to engage in oil extraction and exploitation investment operations, in the almost total absence of valid legal systems to regulate the contractual relationship and without any governmental oversight from the offender of the producing country.

After the oil-producing countries gained their independence from foreign colonialism, some adjustments took place that were in line with the developments in the situation that emerged for these countries. The first adjustment was related to the rule of equal profits from the point of view of the sovereignty of states over their natural resources and wealth, which is that the producing country receives an amount equivalent to (50%) of the profit resulting from the operations of these companies. Nationalization of the Anglo-Iranian Petroleum Company due to the British side's refusal to apply the rule of interest equalization between it and Iran in 1951. The second was related to the spending royalty or rent: the royalties or royalties are considered part of the production expenses or costs and not part of the contracting countries' share in the total profits. The third had to do with the system of giving up unused spaces: the principle of relinquishment is that the foreign company relinquishes any parts of the unexploited concession areas, as the company used to freeze large and unexploited areas in order to avoid competition with other petroleum companies. The fourth involved adopting the system of participation in traditional petroleum concession contracts: one of the most important amendments that occurred in the traditional concession contracts is the introduction of the participation system, which led to the demise of the concession contracts in their traditional form, and benefits the participation of the state that owns the region in the management and exploitation of the petroleum resources inherent in its lands.

AFRICAN COUNTRIES TO PUSH FOR ENERGY TRANSITION JUSTICE

African Energy Week

A few days before the global climate talks in Sharm El-Sheikh, a group of African energy senior officials stressed the necessity of unifying the African voice during COP27 to achieve climate justice, which would allow them to make effective use of their resources. In one way or another, the African energy sector leaders have expressed a common position that sees fossil fuels as necessary for expanding their economies.

"From Cape to Sharm: A Common African Voice for COP27" was the title of the discussion panel which was held at the closing event of Africa Energy Week in Cape Town, South Africa. The panel, which was moderated by Mohamed Fouad, Founder and CEO of Egypt Oil & Gas, began with pre-recorded remarks by Tarek El Molla, the Egyptian Minister of Petroleum and Mineral Resources.

The panel witnessed the participation of Gabriel Mbaga Obiang Lima, Minister of Mines and Hydrocarbons in Equatorial Guinea; Sophie Gladima, Senegal's Minister of Petroleum and Energies, Mahamane Sani Mahamadou, Minister of Petroleum of Niger and Matthew Opoku Prempeh, the Ghanaian Minister for Energy, and NJ Ayuk, Executive Chairman of the African Energy Chamber.

In his remarks, El Molla referred to the disproportionate responsibility placed on Africa, which contributes less than 4% of the world's energy-related emissions but faces serious consequences to the lives and livelihood of its people.

"Although the African continent is not responsible for the climate change crisis, it is facing its most negative impacts. Nevertheless, the continent is considered as a model for serious climate action, as much as its capabilities and support that it receives allow," El Molla said.

The Egyptian minister referred to COP27 as an opportunity to articulate Africa's priorities for reducing emissions, transformative adaptation, accessing appropriate funding, and addressing climate repercussions.

"We certainly cannot ignore the fact that oil and gas resources still represent an essential source of energy globally, and will remain part of the global energy mix over the long term," El Molla told the panel.

"Our goal is to provide oil and gas sources in ways that are more responsible, environmentally friendly and with reduced impacts on the climate, including through CCUS [carbon capture use and storage], methane emissions reduction and carbon circular economy," he said, indicating that as it is crucial to highlight the global role in providing access to funding for gas projects, the deployment of technologies and capacity building are becoming increasingly necessary to provide these oil and gas resources in ways that are more responsible with reduced impacts on the climate.

In his introductory remarks, Fouad also referred to what he described as a complete climate injustice for Africa, indicating that Africa's high vulnerability to climate change and low level of readiness for its impact is threatening to derail development goals and impose further economic costs and social disruption. "True climate justice suggests that Africa is owed 10 times as much as the global climate finance that it received in recent years," said Fouad.

The EOG's CEO highlighted the "need to face this new international gathering (COP 27) with a common position on how the energy transition should look like for Africa in the near

future to improve intra-continental cooperation and investment with the goal of eliminating energy poverty."

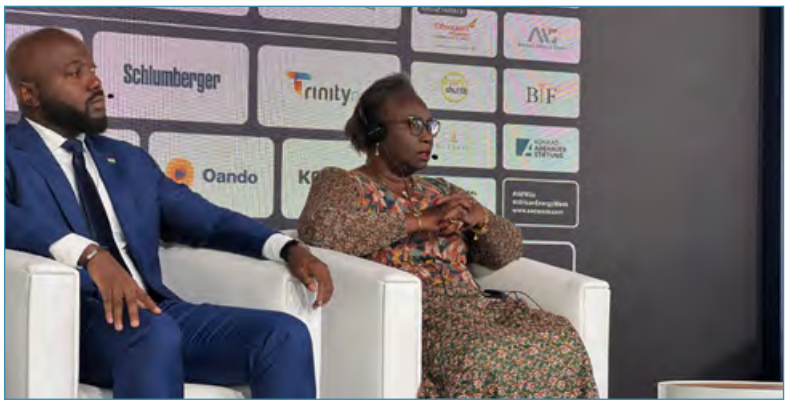
Equatorial Guinea's Obiang Lima stressed that Africa's energy security is a top priority for him saying, "Anything regarding energy security, that's really our priority. That's what we will be talking... only energy security. Once we achieve the energy security... [then] we start talking about the transition or the transformation or any other things."

The pro-gas, pro-investment leader defended the right of Africa to use its own resources. "I very strongly advocate for... when you say China (can use their fossil fuels) it's okay when you say America (can use their fossil fuels) it's okay... only when you say Africa, it's wrong. China's resources for China, American resources for America... it has to be the same thing – African resources for Africa," said Lima.

Responding to a question on the role developing countries in Africa should play to maximize oil and gas production for economic growth and energy security, Senegalese Minister of Petroleum and Energies, Sophie Gladima, referred to funding as an essential issue. She indicated that "The planet has given us natural resources and we have to exploit them. But we need to exploit them in a responsible manner and ensure that we do not make the same mistakes others have done in the past. Let us use our oil and gas and have the chance to grow."

The Senegalese Minister suggested that ministers of energy must go and convince the ministers of the environment. "We need to decide together and find a way that is for the good of Africa," she concluded.

Answering a question about what victory can Africa achieve during COP 27, Matthew Opoku Prempeh, the Ghanaian Minister for Energy, said that he doesn't want to talk in terms of victory, but in terms of responsibility and rights.



"I will be an irresponsible leader to sell my country on the altar of energy transition without talking about the significance of energy security or energy access or without talking about energy affordability," he said, urging ministers of energy to build and develop a consensus. "We should not allow ourselves to be divided between environment and development."

He continued that "If we talk about the energy transition, we will talk about using what God has given us to use. We will continue to exploit our reserves for the socioeconomic development of the country."

Niger's petroleum minister, Mahamadou urged international oil companies (IOCs), in the same way, that African countries and ministers have to stay united and speak with one voice. "IOCs have to join that single narrative that we share," he said, indicating that Niger is working closely with IOCs to ensure the full potential of the oil and gas is exploited.

"Oil and gas industry is the driver of our economy. How we cannot exploit this resource. It's suicide. It's basically telling Niger that you cannot exploit the only resource that you have," said Mahamadou.

NJ Ayuk, Executive Chairman of the African Energy Chamber, concluded the panel with an important message: "drill, baby, drill".

"That should be Africa's message to the world. If you want to solve energy poverty, gas baby gas. Europe wants to call gas green: it has always been green. If it is green gas for Europe, why is it not green gas for Africa? We can do better if we tone down the rhetoric that energy producers are evil people or bad people. We need to go to COP27 to back up our energy producers. We should not be apologizing for our energy sector. That is the message we should take."

El Molla assured African partners that the climate conference would witness the launching of an African initiative on how to make the best use of the continent's natural wealth during the transition to clean energy.

"The African initiative will consider optimum monetization of the continent's energy resources especially natural gas to support economic growth and sustainable development of African nations to fulfill their aspirations and welfare of the local societies."

THE RIPPLE EFFECTS OF OPEC DEEP OIL CUTS

BY IHAB SHAARAWY

The decision by OPEC+ to cut production by 2 million barrels last month triggered a trade of accusations and a verbal war between the US administration and OPEC's de-facto leader, Saudi Arabia. While the US sees the decision as clear support for Russia in its war with Ukraine, Saudi Arabia and its allies insist that their decision was based on the dynamics of the market and was not politically motivated.

Whether it was politically motivated or not, the decision will not go without consequences on world politics and markets.

A POLITICAL SHIFT

During the 33rd OPEC and non-OPEC Ministerial Meeting, the 23-member alliance decided to reduce production by 2 million barrels per day. The cartel cited the uncertainty that surrounds the global economy and oil market outlooks as a reason for the decision. However, the cartel faced accusations that the move could increase crude oil prices and aid Russia in its war in Ukraine and hamper Western attempts to reduce its financing.

The White House said that US President Joe Biden was "disappointed" with what the White House described as a "shortsighted" decision to reduce production.

Biden's statement went on to indicate that the decision will hit countries that are "already reeling" from high prices. It added that "the global economy was dealing with the continued negative impact" of Moscow's attack on Ukraine.

Saudi Arabia rejected the US accusations saying that they are "not based on facts" and take the OPEC+ decision out of its "purely economic context."

Saudi Foreign Ministry stressed in a statement that all 23 members of the OPEC+ group agreed unanimously to the decision and that the outcomes are based purely on economic considerations that take into account maintaining a balance of supply and demand in the oil markets, as well as limiting volatility.

The Saudi statement revealed the US request to postpone the decision to reduce production by a month was an attempt by the US government to avoid negative economic consequences that may affect the results of the mid-term congressional elections.

However, many observers have seen the move by the Gulf country as a deviation from their traditional stance as a US ally.

The Saudi statement didn't offset the anger of the US officials, who vowed "consequences" after the oil production cut drove up pump prices just weeks before the midterm elections.

US lawmakers are threatening steps, including banning weapons sales to Saudi Arabia and unleashing the Justice Department to file a lawsuit against the country and other OPEC members for collusion.

On the other side, Saudi officials hinted at some vengeful responses, including dumping US debt – that could have huge ripple effects on financial markets and the real economy.

Saudi officials also hinted at the possibility of joining BRICS, an organization made up of a group of emerging economies, namely Brazil, Russia, India, China, and South Africa. Joining BRICS is seen as a sign of belonging to a world that is emerging beyond established Western dominance.

China and Russia have been pushing for the expansion of BRICS, soliciting support for the multipolar system of global governance instead of the unipolar system dominated by the United States.

Russian President Vladimir Putin reaffirmed Russia's unshakable support to Saudi Arabia to join BRICS. Meanwhile, Chinese State Councilor and Foreign Minister Wang Yi asserted that China attaches great importance to the development of China-Saudi Arabia relations and puts Saudi Arabia in a priority position in China's overall diplomacy and its diplomacy with the Middle East region in particular.

In Washington, President Joe Biden came under fire from two different parties, one of them accusing him of failing to punish Saudi Arabia for its behavior, while the other party warns that Biden's policy could drive Saudi Arabia into the arms of Russia or China.

DRAINING RESERVES

Following the OPEC's decision, President Biden announced that he is authorizing the release of 15 million barrels from the Strategic Petroleum Reserve, a draw that completes the plan announced earlier this year to release a total of 180 million barrels.

Biden hopes the 15 million barrels could help keep gas prices at bay. However, many experts think the move can't counter the effects of the OPEC cuts. Others warned that draining the US Strategic Reserves is a dangerous move that can fire back at any time soon.

Since the beginning of the Russian-Ukraine conflict, President Biden has tried to combat rising prices. His most effective move was the decision to begin the largest drawdown of the Strategic Petroleum Reserve in US history. The decision was aimed at combating oil prices that had surged past $100/bbl, and it was certainly a factor that helped reduce oil prices.

However, the OPEC decision came at a critical time as the US Strategic Reserves level was already 33% below the level of a year ago — and at the lowest level since 1984.

The sharpest warning came from Saudi energy Minister, Prince Abdulaziz bin Salman, who saw using emergency reserves by some countries as a market manipulation attempt.

"People are depleting their emergency stocks, had depleted it, used it as a mechanism to manipulate markets while its profound purpose was to mitigate the shortage of supply," he said.

The Saudi Prince indicated that his "profound duty is to make it clear to the world that losing emergency stock may become painful in the months to come."

Many of the Biden critics are worried about draining their reserves as winter is approaching while there are many threats to supply, not only from Russia, but also from unstable Iraq, Libya and the North Sea; which can be vulnerable to the European conflict with Russia.

They also wonder how Biden can fill the reserves again while adopting a green policy that promises to limit fossil fuel activities. Day by day, Biden becomes more worried about fuel prices and the prospects of losing more reserves.

His recent vent of anger was against Oil and Gas companies, accusing oil companies of "profiteering" from Russia's invasion of Ukraine as he threatened them with legislation to impose a windfall tax unless they increased their output.

US petrol prices hit record levels of more than $5 a gallon this summer. They have since fallen but remain more than 60 percent higher than when Biden took office amid robust oil consumption and constraints on global supplies.

The coming days may witness more actions from Biden and more ripple effects on the market and global economic scene. It can also shake one of the deep-rooted political alliances.

GREEN HYDROGEN: A NEW CHAPTER IN EGYPT'S ENERGY FUTURE

With the proposal of carbon-neutral goals in various countries intensifying worldwide climate action and the rise of the green economy in the post-pandemic period, building a low-carbon, and clean hydrogen supply system has gradually become a world consensus.

To tackle the problems related to oil imports and vehicular emissions, there's a desire to explore alternative carbon-free fuels that will be available locally in sufficient quantities to fulfill Egypt's energy demands. The green economy could be a new concept evolving and gaining attention worldwide; the concept focuses on sustainable and environmentally friendly solutions.

Hydrogen is such a carbon-free fuel that will help to attain the targets of the green economy and therefore the best means to store energy for a protracted time. It is also a high energy content fuel and has about zero greenhouse emissions when utilized in fuel cells.

Hydrogen isn't directly available in free form, but it is produced using electrolyzers and various other techniques. Egypt's continuously growing renewable power generation capacity offers the advantage of providing hydrogen from green sources, like solar and wind power at a time of lower demand. The current review work focuses on the opportunities in green hydrogen production because the adaption of green hydrogen offers many benefits to Egypt, including energy security and the decarbonization of the transport sector.

The Ministry of Petroleum and Mineral Resources and the Ministry of Electricity and Renewable Energy showcased the plans and efforts toward achieving sustainable energy by 2035 and modernizing the energy sector in Egypt under the auspices of the European Union (EU). Egypt aims to succeed in 42% of the contribution of renewable energy within the nation's energy blend by 2035.

Most of the initiatives associated with hydrogen production projects in Egypt, currently, are feasibility studies and pilot projects, primarily aimed toward understanding financial and technological risks related to these projects. It's likely that there'll be no major jumps in the production and use of green hydrogen as long as the current challenges and obstacles remain.

The Egyptian state should begin, as soon as possible, in earnest on its green hydrogen production journey, supported by clear milestones that are realistic and achievable. Increasing the employment of locally produced green hydrogen could significantly reduce the energy imports from abroad, in addition to the opportunity of generating more income for the State Treasury. The Egyptian economy is estimated at billions of dollars annually, and it'll also provide new opportunities to draw in foreign and domestic investments. This will, thus, create new job opportunities for youth and all of this will certainly contribute significantly to Egypt's economic development and national security.

ENG. MOHAMED ATIA

PROCESS ENGINEER, ENPPI

COP27: EGYPT'S HISTORIC MOMENT IN LEADING CLIMATE ACTION

With Sharm El Sheikh being the host city of COP27, Egypt's role as a leader in worldwide climate action has never been strong as it is now, with government officials, state leaders, monarchs, and corporate notables coming to the country's Red Sea resort city to take part in this remarkable global conference.

This comes with Egypt being considered among the countries that are committed to implementing huge projects in the field of renewable energy production, as part of achieving a sustainable energy mix that reduces the bill for using fossil fuels to generate electricity, and contributes to confronting emissions.

Egypt succeeded in raising the share of renewable energy in the electricity generation mix to 20% at the end of 2021, with a target to reach 42% by the end of the current decade 2030.

The Egyptian Ministry of Electricity in Sharm El-Sheikh is implementing three solar power plants with a capacity of 15 megawatts for the station. In order to supply the city with clean energy, it is also implementing a solar plant at Sharm El-Sheikh Airport and another at the conference center site with a total capacity of 1.27 MW, and it is also planning to deploy solar energy systems on the roofs of hotels.

The Ruwaisat area of the city is witnessing the implementation of a 12 megavolt-ampere battery charging station for electric buses, which aims to charge 180 electric buses, and the Egyptian Ministry of Electricity is working to implement 10 car charging stations in the city.

Egypt has allocated about 7,650 thousand square kilometers of land for renewable energy projects, with capacities of up to 55 gigawatts of solar energy and 35 gigawatts of wind power.

Egypt succeeded, through its renewable energy projects, in reducing about 10 million tons of carbon dioxide emissions during 2021, and saving 4 million tons of oil equivalent in fuel.

The National Climate Change Strategy for 2050 has five objectives on mitigation, adaptation, governance, financing and attraction, scientific dissemination, technology transfer, and raising societal awareness. The 2050 National Climate Change Strategy looks at integrating civil society, the government sector and citizens for sustainability in climate action at the local, regional and international levels.

Egypt has prepared fifteen initiatives that include sustainable transport, waste recycling, women's health, transition to clean energy, sustainable cities, adaptation measures in the water and agriculture sector, climate peace, and adaptation through environmentally friendly measures.

COP27 is a promising opportunity for Egypt to promote itself on an international level and it also places a great responsibility on the Egyptian government for its successful organization. The event is an exciting chapter in the history of a country that has survived for millennia and will continue leading the way in global climate action.

ENG. MOHAMED ABDELRAOUF

Qarun petroleum company Production Gen Mgr.

COUNTING DOWN TO

COP27 SHARM EL-SHEIKH EGYPT 2022

Renewable Energy Review
2020 & 2021

Global Overview

The role of renewables in improving energy security and sovereignty by replacing fossil fuels became an important topic for discussions; as energy prices increased sharply in late 2021 after easing the lockdown regulations worldwide and as the Russian Federation's invasion of Ukraine unfolded in early 2022. During the last two years, renewables experienced a growth in power capacity and electricity generation, despite aftershocks from the pandemic and a rise in global commodity prices that upset renewable energy supply chains and delayed projects.

Total Renewable Energy Capacity (MW)

		Growth Rate
2020	2,808,273	↑ 9.26%
2021	3,068,297	

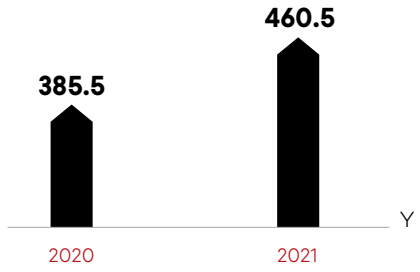
Total Renewable Energy Generation (TWH)

		Growth Rate
2020	7,449	↑ 5.5%
2021	7,913	

Total Investments in Renewable Energy in 2021

365.9	48.5%	↑ 6.8%
Value ($ billion)	Share	Growth Rate (YoY)

Total New Investments* in Renewable Energy



*Green Field Investments

Electricity Generation from Renewable Energy* in 2021

7,931 TWH	27.8%	↑ 5.8%
Volume	Share	Growth Rate (YoY)

*Including Wind, Solar and Hydroelectricity

Egypt's Highlights

The Egyptian government is cognizant of the need for a sustainable energy mix to the address increasing demand, and to move to a more environmentally sustainable and diverse electricity sector. Egypt adopted 2035 Integrated Sustainable Energy Strategy to facilitate the transition to clean energy. The Strategy emphasizes the importance of renewable energy and the country is targeting 42% renewables in total electricity generation by 2035.

Total Renewable Energy Capacity (MW)

		Growth Rate
2020	5,966	↑ 4.4%
2021	6,227	

Total Renewable Energy Generation (TWH)

		Growth Rate
2020	19.2	↑ 7.8%
2021	20.7	

Electricity Generation from Renewable Energy* in 2021

- 25.1 TWH — Volume
- 11.9% — Share
- ↑ 2% — Growth Rate (YoY)

*Including Wind, Solar and Hydroelectricity

Renewable Energy Sector's Under Development Projects in 2021

- 3,570 MW — Capacity

FDI Directed to these Projects

$3.5 billion

78% for Wind | 22% for Solar

Main Renewable Energy Projects

1. Solar Projects

Implemented Projects

Total Capacity **1,763** MW

Projects

- Kuraymat Integrated Solar Plant
- Benban Solar Complex
- PV Cell Plant at Kom Ombo in cooperation with AFD
- Grid-connected Distributed PV Cell Plants
- Decentralized PV Cell Plants Separated from the Grid

Under Construction Projects

Total Capacity **>1,170** MW

Government Projects

PV Cell Plants

Areas	Partners	Total Capacity
Hurghada, Zafarana & Kom Ombo	JICA & AFD	120 MW

BOO (Build-Own-Operate) Private Sector Projects

PV Cell Plants

Areas	Companies	Total Capacity
Kom Ombo, Aswan & West Nile	Aqua Power & ALNOWAIS	700 MW

2. Wind Projects

Implemented Projects

Total Capacity **1,375** MW

Projects

Zafarana	Wind Farm
Gabel El Zeit	Wind Farm
Gulf of Suez	Wind Station

Under Construction Projects

Total Capacity **>2,400** MW

Projects

- West Bakr Wind Station by Lekela Company
- Gulf of Suez (1) Wind Station in cooperation with the EIB, FDA and EU
- BOO Gulf of Suez Projects

تحت رعاية فخامة الرئيس عبد الفتاح السيسي رئيس جمهورية مصر العربية

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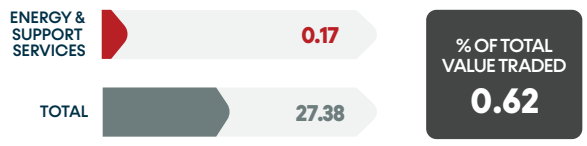
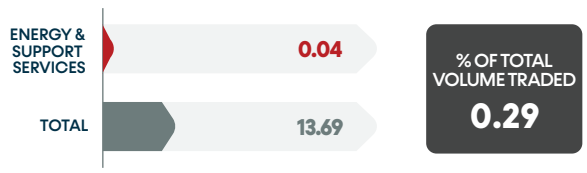
EGYPT OIL&GAS RESEARCH & ANALYSIS

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

VALUE TRADED (EGP BILLION)



VOLUME TRADED (BILLION SHARES)



Performance of Petroleum Companies in the Egyptian Exchange in September 2022

NATIONAL DRILLING

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

ALEXANDRIA MINERAL OILS CO.

CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	4.15	▲ 13.39

EGYPT GAS

CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	31.68	▼ 12.22

SIDI KERIR PETROCHEMICALS

CURRENCY	CLOSE PRICE	YTD PRICE CHANGE (%)
EGP	7.35	▼ 5.77

MAIN ECONOMIC INDICATORS

August 2022 | September 2022

ANNUAL INFLATION HEADLINE CPI (%)

14.6 ▲ 15

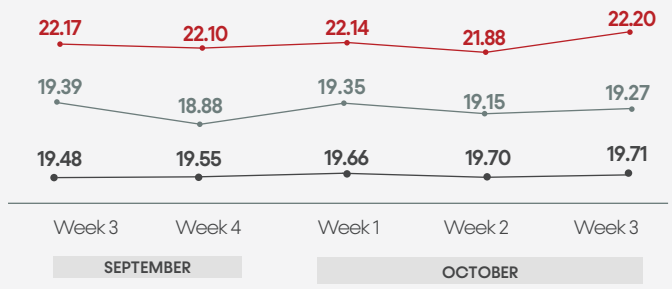
NET INTERNATIONAL RESERVES ($ BILLION)

33.142 33.198

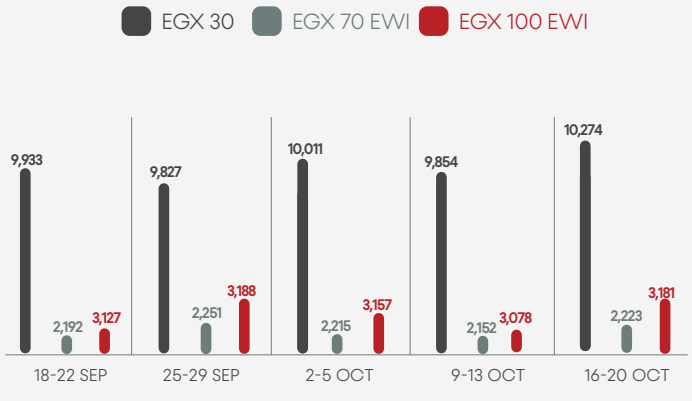
NON-OIL PRIVATE SECTOR PMI (POINTS)

47.6 47.6

EXCHANGE RATES

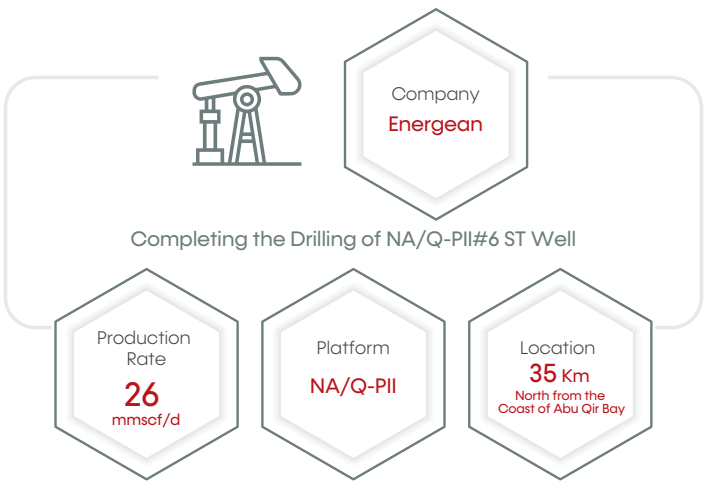


CAPITAL MARKET INDICATORS

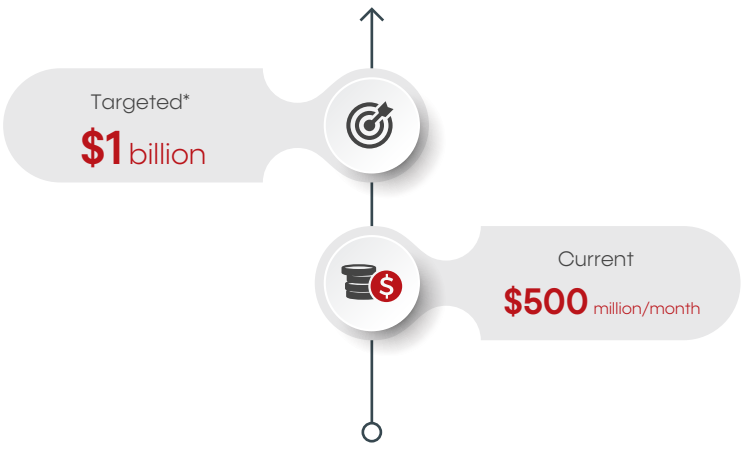


Source of Raw Data: CBE, CAPMAS, Egyptian Exchange, PMI by S&P Global

NATURAL GAS PRODUCTION UPDATES WITHIN THE ABU QIR CONCESSION

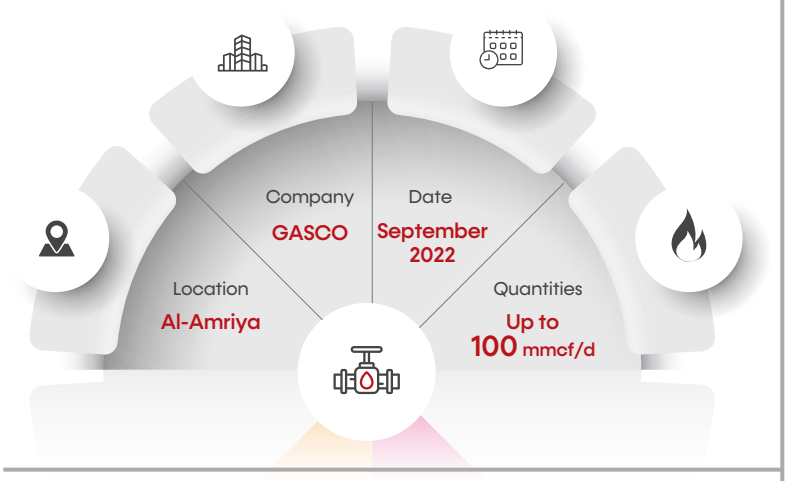


EGYPT TO INCREASE EARNINGS FROM NATURAL GAS EXPORTS

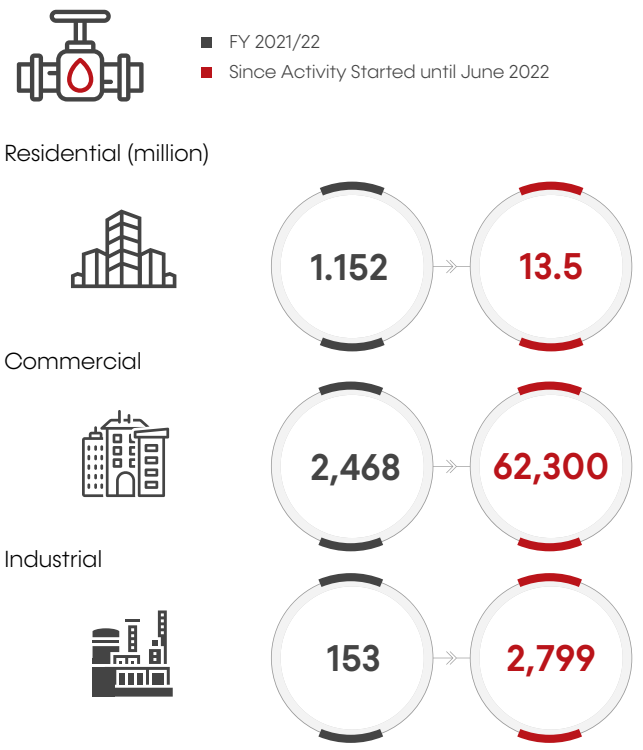


*In the Coming Period

LINKING THE RAVEN GAS LINE TO THE BUTANE EXTRACTION PLANT PROJECT



NATURAL GAS DELIVERY UPDATES



Through **9** Natural Gas Distribution Companies

OIL & GAS SECTOR'S EXTERNAL PERFORMANCE IN FY 2021/22

Oil trade balance achieved a surplus of **$4.4** billion

Total FDI Inflows **$4.7** billion

INTERNATIONAL OIL PRICES

	BRENT PRICES ($/BBL)	OPEC BASKET PRICES ($/BBL)	NATURAL GAS PRICES ($/MMBTU)
16 August	92.34	97.44	9.33
31 August	96.49	101.04	9.13
7 September	88	95.88	7.84
30 September	87.96	92.34	6.77
7 October	97.92	97.44	6.75
19 October	92.4	89.29	5.46

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