

SPECIAL EDITION

MODERNIZATION PROJECT
TURNING EGYPT'S
AMBITIONS
INTO REALITY

**UPSTREAM
INVESTMENT
ATTRACTION**
TO FUEL MODERNIZATION

**UPSTREAM
PERFORMANCE
PROGRAM**
AS A ROADMAP



HUMAN CAPITAL
THE INDUSTRY'S
MAIN ASSET

EGYPT TO BECOME
A REGIONAL ENERGY HUB
A NEW ERA

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EGYPT'S OIL AND GAS
MODERNIZATION

برنامج تحديث و تطوير قطاع البترول



EGYPT
OIL & GAS
NEWSPAPER



EGYPT'S OIL AND GAS MODERNIZATION

برنامج تحديث و تطوير قطاع البترول



MODERNIZATION PROJECT: TURNING EGYPT'S AMBITIONS INTO REALITY

BY **MARIANA SOMENSI**

The ground that supports the oil and gas sector's structure did not remain unshaken after the political turmoil that followed Egypt's revolution in 2011. The lack of security and political stability negatively impacted investments in exploration activities and in the sector as a whole. As a result, crude oil and natural gas production sharply dropped, which increased the gap between energy supply and demand and generated continuous shortage of petroleum products throughout the country.

The sector reached a period of stability between 2013 and 2014, when some reform policies started to be implemented. Egypt's arrears to international oil companies (IOCs), which stood at \$6.3 billion between 2011 and 2012, were reduced to one third of the amount, and the country took its first steps towards the ongoing energy subsidies reform.

Under the supervision of the Ministry of Petroleum and Mineral Resources, the Egyptian oil and gas sector recorded continuous growth despite the 2014 global crash in crude oil prices. While the international market struggled with the prices downturn, the Egyptian oil and gas industry reached new highs from that year on – which included the discovery of mega natural gas fields, such as Zohr and Nooros, in 2015.

Looking at making the sector's achievements sustainable, unlocking full potential, and enhancing the sector's contribution to the Egyptian economy, the ministry developed in 2016 a strategy to completely transform the petroleum industry. The Modernization Project covers the whole value chain and aims at establishing an agile organization structure through deep changes in ways of working.

DIAGNOSTIC PHASE

The Modernization Project was divided into two phases: phase one, diagnostic; and phase two, implementation. During the diagnostic phase, the ministry engaged with a leading consultant; worked

on data collection, interviews, and workshops; and outlined a SWOT analysis in order to identify the industry's main challenges.

A number of key themes emerged from this phase. Energy subsidies, production and consumption levels, and operational efficiency were classified as crucial to achieve financial sustainability. On the other hand, arrears and back payments to international oil companies (IOCs) as well as the sector's concessionary regime were identified as important for achieving asset sustainability. In addition, the ministry identified demarcation of sector roles, inter-ministerial coordination, and sector structure and decision process as points of concern to achieve organizational sustainability on a sector level, while organizational capabilities and skills were important on an entity level.

With theses themes in hand, the top 50 leaders in the

core values: safety, innovation, ethics, transparency, and efficiency.


To achieve this vision, 61 required improvements were synthesized into 12 actionable initiatives, which were consolidated into seven pillars: Upstream Investment Attraction; Sector Structure Reform; Human Resources (HR) Management; Downstream Performance and Energy Efficiency; Upstream Performance; Oil and Gas Hub Strategy; and Decision Support and Data Flow.

On November 15, 2016, Minister of Petroleum Tarek El Molla presented the project to H.E. President Abdel Fattah El Sisi and former Prime Minister Sherif Ismail, and received political support to start the implementation phase.

IMPLEMENTATION PHASE


The project's implementation structure includes a steering committee responsible for establishing priorities; supporting and allocating resources; approving key decisions related to the project's pillars; approving policies and plans; acting as a main interface; and leading inter-ministerial discussions. It also includes a realization office that works as an integrator and implementation engine, in addition to different program teams for the programs carried under the umbrella of the Modernization Project.

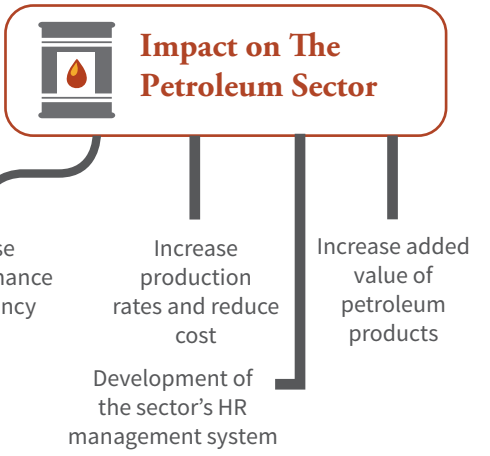
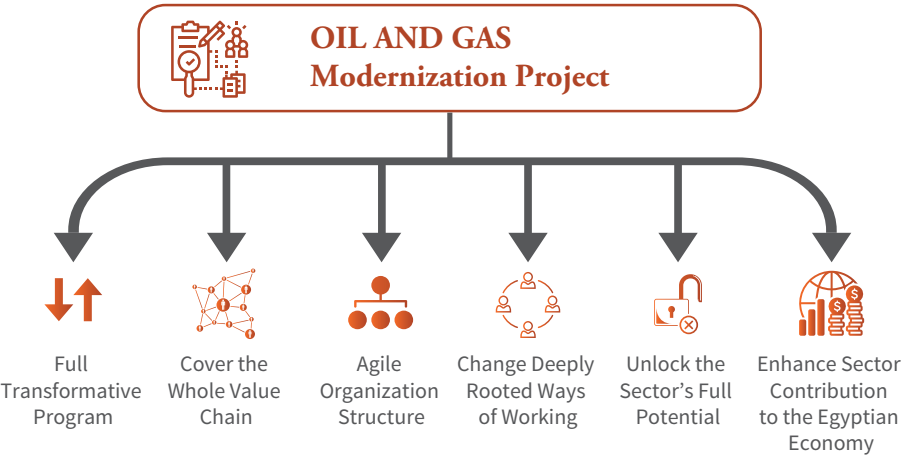
The implementation schedule comprises short-term plans with tangible quick wins, long-term plans to ensure achieving the project's vision, and concrete milestones for each pillar.



Modernization Project's Vision

To continuously unlock the sector's full value chain potential as a growth and a sustainable development engine for Egypt; achieve financial sustainability; and become a leading regional oil and gas hub and role model for the future of modernized Egypt.







“MODERNIZATION IS A
CRUCIAL STEP TOWARDS FULL
EFFICIENCY AND
SUSTAINABILITY”

HE. ENG. TAREK EL-MOLLA
Minister of Petroleum and Mineral Resources

EXPECTED OUTCOME

Once all the pillars of the Modernization Project are completed, Egypt expects to have established strong partnerships with neighboring countries and international stakeholders, serving the region as a strategic energy hub.

In order to enable any other achievement, the ministry expects great increase in investment flows. The participation of international oil companies (IOCs) in the Egyptian oil and gas sector plays a vital role to fulfill this expectation. Accordingly, and in line with the modernization efforts, the government is committed to completing the payment of the accumulated arrears to IOCs.

Under the new structure of the sector, the ministry sees itself as a policy and strategy maker, while the state-owned enterprises (SOEs) focus on executing profitable business in the upstream, midstream, and downstream sectors. Looking at having the Egyptian oil and gas industry benchmarked against any other international oil and gas company, the Modernization Project also expects to successfully liberalize the market, with a third body established as an independent regulator to set prices, fees, tariffs, and prevent monopolies. Egypt has already taken a step forward on this matter through the new natural gas law and its executive regulations, and the establishment of the Natural Gas Regulatory Authority, created to monitor the natural gas market under the new natural gas law.

Moreover, the ministry expects a strong upstream sector with efficient exploration campaigns and, most importantly, optimized production from existing facilities; in addition to a comprehensive downstream strategy and enhanced energy efficiency. For this, the project looks at having new technologies and best practices implemented as well as a full transformation in human capital development.

The modernized oil and gas sector will be more agile, integrated, and efficient - with high performance and focus on results - and a consolidated enterprise resource planning (ERP) system.



Modernization Program Pillars

- Upstream Investment Attraction
- Sector Structural Reform
- HR Management
- Downstream Performance and Energy Efficiency
- Upstream Performance
- Oil and Gas Hub Strategy
- Decision Support and Data Flow

SUCCESS FACTORS

The Modernization Project was built on a solid base and has many features that drive to success. It has a strong implementation structure and a well-defined execution plan, both developed through a scientific and innovative approach.

It has the necessary political support, in addition to the support of the sector's leaders and decision-makers. On top of that, the timing of the Modernization Project copes with Egypt's Vision 2030, and the ministry does not only count on the collaboration of industry experts, but also on the creative and energized youth.

The initial estimates of the project's total profit reaches around \$7 billion. With this, the Ministry of Petroleum looks forward to increasing the sector's collaboration to the Egyptian economy and anticipates that the oil and gas sector will be a role model to other industries in Egypt and worldwide.

“MODERNIZATION NOT
ONLY UNLOCKS THE
POTENTIAL OF THE EGYPTIAN
OIL AND GAS SECTOR, BUT
ALSO PREPARES THE COUNTRY
TO LEVERAGE ITS RESOURCES
AND PROFIT FROM THEM IN A
SUSTAINABLE MANNER.”

HE. ENG. TAREK EL-MOLLA
Minister of Petroleum and Mineral Resources

VOICE OF THE YOUTH:

A COLLECTIVE INTERVIEW WITH YOUNG PROFESSIONALS IN THE MODERNIZATION PROJECT

BY **MARIANA SOMENSI**

Opening new job opportunities and offering trainings to the youth is an important step towards guaranteeing qualified human resources (HR) and leaders for the future. However, the new generation of petroleum employees are not just long-term calibers. Their creativity and motivation have a lot to add to current affairs, and the industry has a lot to learn from listening to their voices.

Thinking of this, Egypt Oil & Gas spoke to young professionals involved in the Ministry of Petroleum and Mineral Resources' Modernization Project, and heard what they had to say about their participation in the project and the future of the industry.

CAREER IMPACTS

Developing Egypt's human capital with a special focus on youth is one of the main objectives of the Modernization Project. The great number of young professionals involved in the project reflects this vision, and the experience of being part of the transformation of the sector has impacted their careers from many different angles.

Ahmed Gamal currently works as the Commercial Analysis Section Head at the Modernization Project's people program. Although this role is a bit far from his career scope, Gamal was given the opportunity to wider his knowledge about human capital management.

"The Modernization Project had great impact in my career in the sector as it developed many soft skills and expanded my work network," he said.

Ahmed El-Sayed Mohammed, Section Head of the Refining and Processing Department at the Egyptian General Petroleum Corporation (EGPC), was one of the candidates selected to participate in the ministry's Middle-Management program.

"I followed all the examination steps, including the online application, written exam, and panel interview; and I have been selected to participate in this program,

which will develop my qualifications and improve my career," he told us. Mohammed also said that, during the process, he was given a good chance to have an overview of the whole petroleum sector's activities, which enhanced his experience through the direct contact with other colleagues from different segments.

Amr Ashraf, Senior Engineer at the ministry's Technical Office, became part of the Modernization Project's Process Management Team back in 2016 when he was just 28 years old, which he sees as a great achievement in his career.

Facing the sector's challenges over the full value chain and trying to cooperate effectively to overcome them, was a big challenge, according to Ashraf. "However, this challenge taught me how to handle an enormous amount of information at the same time and to always push my capabilities with the belief that we are doing something better for our future," he stated.

Mahmoud Maher Sayed Ahmed, Section Head at the ministry's Energy Efficiency and Climate Division, works under the Downstream Performance and Energy Efficiency pillar of the Modernization Project. In this position, Ahmed has interviewed several experts and dealt with various technologies and techniques. "I have acquired more experiences and skills, especially on the enterprise planning and strategies," he said.

Enas Shabana, Communication Senior Specialist who worked as media specialist for six years in the Egyptian Natural Gas Holding Company (EGAS), received the nomination to work at the Modernization Program's Communication Team with great excitement.

"Since I joined the Communication Team, I have undergone various astonishing training experiences with international experts, consultants, and agencies that helped me develop my experience and skills," she told us.

The geophysicist Mohamed Radwan, Assistant General Manager at the ministry's Exploration Central Department, sees many personal and technical benefits from being part of the project's Investment Attraction pillar. According to him, "the continuous interactions and discussions between team members with various backgrounds and different perspectives broadened the knowledge and strengthened the [project's] outputs."

SECTOR'S NEEDS

The experience acquired by the young professionals enabled them to have their own visions on what the sector needs to grow and be sustainable. For Gamal, clear organizational business plan and human capital development are the two key elements to achieve this goal.

Ashraf agrees with Gamal on the role played by human capital. "The Egyptian oil and gas sector has very good calibers across its different companies - varying from services companies to joint ventures - working towards one goal, which is to achieve the maximum profit for the country," he said.

The same point of view was presented by Mohammed, who believes that "the sustainable development and the creation of talented employees, as well as achieving

a sustainable work environment” are crucial for the sector’s growth.

Shabana shares their sentiments. “Many concrete steps have been taken through the HR team, such as establishing a unified integrated database that includes all sector employees followed by analyzing the data of all companies across the sector and designing development plans accordingly. This will allow us to have a better view about the employees’ competencies and skills, which would enable us to assign the right person in the right place,” she said.

From his side, Ahmed suggested a mix of HR management, solid structure, and technology. “I believe a smart sector structure backed by competent personnel and a common digitalized resource planning system will boost the sector’s growth and ensure the sustainability of the achieved goals.”

Shabana built on Ahmed’s comments and expressed her views about the sector’s structure reform. “I believe that the improved governance and role clarity in the new sector structure enables defining accountability and clear separation of regulatory, policy making, and operational roles. This will be a very important step to increase efficiency and effectiveness of the sector,” she said.

“We have to standardize a continuous improvement process for all our work activities in order to always guarantee the most efficient work cycle and the maximum productivity and profitability,” Ahmed added.

Commenting on the role of digitalization, Ashraf expressed his belief that digital transformation is necessary to continue the momentum of success achieved by the sector.

From Radwan’s perspective, the sector’s growth and sustainability rely on “encouraging and attracting new investments in exploration and development domains for achieving sizeable oil and gas discoveries; developing petrochemical industries; and diversifying Egypt’s energy mix and increasing its efficiency.”

In order to achieve that, Mohammed suggested investing on the “continuous improvement and upgrading of the production units and using new technologies that increase the productivity along with following the environmental regulations.”

“All petroleum sector entities should be run by a successful economic model which secures the demand of the local market and maintains good profit and sustainable development for the entity,” he added.

All these aspirations would not be possible without strong leadership, according to Shabana.

LOOKING AT THE FUTURE

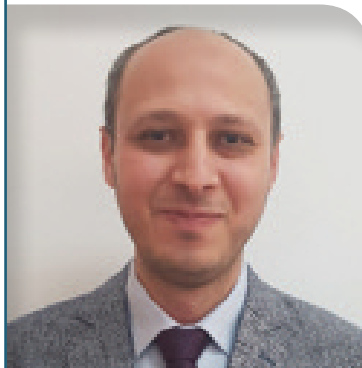
When asked about their visions on the future of the Egyptian oil and gas sector, Gamal told us the sector will witness a significant change in many areas of development, especially in HR management.



ENAS SHABANA

COMMUNICATION SENIOR SPECIALIST

“IMPROVED GOVERNANCE AND ROLE CLARITY IN THE NEW SECTOR STRUCTURE ENABLES DEFINING ACCOUNTABILITY AND CLEAR SEPARATION OF REGULATORY, POLICY MAKING, AND OPERATIONAL ROLES.”



MAHMOUD MAHER SAYED AHMED

SECTION HEAD, ENERGY EFFICIENCY AND CLIMATE DIVISION

“I BELIEVE A SMART SECTOR STRUCTURE BACKED BY COMPETENT PERSONNEL AND A COMMON DIGITALIZED RESOURCE PLANNING SYSTEM WILL BOOST THE SECTOR’S GROWTH AND ENSURE THE SUSTAINABILITY OF THE ACHIEVED GOALS.”



MOHAMED RADWAN

ASSISTANT GENERAL MANGER - EXPLORATION CENTRAL DEPARTMENT

“[THE PETROLEUM SECTOR] IS EXPECTED TO DRIVE THE ECONOMIC GROWTH BY INCREASING CRUDE OIL AND NATURAL GAS RESERVES THROUGH FAST-TRACKING THE EXPLORATION PROGRAMS, ATTRACTING MORE INVESTMENTS FOR THE PETROCHEMICAL INDUSTRIES, AND BEING A REGIONAL HUB FOR TRADING AND EXCHANGING OIL AND GAS.”

“Minister Tarek El Molla has always emphasized the importance of the sector’s human capital in leading such a huge project as the Modernization Project. Accordingly, a series of actions were taken, starting with the analysis of the existing human capital through a well-designed HR database. This is considered as the backbone for any further required actions that will benefit the sector,” he stated.

For Mohammed, Egypt’s infrastructure and strategic location will enhance the country’s participation in the international market. “I believe Egypt will be a successful energy hub, which will facilitate the energy or hydrocarbon trading in the Middle East and Africa.”

In agreement with Mohammed, Ashraf stated that the new agreements with Jordan, Cyprus, and Greece as well as the launch of the Eastern Mediterranean Gas Forum represent solid steps towards being an energy hub in the future.

“On a wider scope, throughout the Modernization Project and with the achievements already accomplished and the upcoming ones, we can see that the Egyptian oil and gas sector could be a role model for the other governmental sectors for the future of a better Egypt,” he added.

For Ahmed, the sector’s recent achievements have unlocked its full potentials in terms of human capabilities, performance, and productivity enhancement. “As a result, the sector has become more attractive to investments, which will support sustained growth and profitability,” he said.

Shabana is equally optimistic about the future. “I can see a growing sector with investments flowing into new exploration and development activities that will enable us to boost our oil production and gas development projects; in addition to a downstream sector that follows a deliberate expansion strategy with new projects, partners, investments, and significantly improved energy efficiency,” she told us.

Shabana also sees “a new agile sector with clear separation of policy, regulatory, and operational activities that will enable all employees to work efficiently.”

“The energy sector is very promising,” Radwan stated. “It is expected to drive the economic growth by increasing crude oil and natural gas reserves through fast-tracking the exploration programs, attracting more investments for the petrochemical industries, and being a regional hub for trading and exchanging oil and gas,” he added.

The young professionals’ comments represent a clear sign that the ministry’s expectations with youth participation are being achieved. During the conversation with Egypt Oil & Gas, they have all showed valuable experiences with the Modernization Project, and seem to see the industry with very analytical eyes.



AHMED GAMAL
COMMERCIAL ANALYSIS SECTION HEAD

“[THROUGH THE MODERNIZATION PROJECT] A SERIES OF ACTIONS WERE TAKEN, STARTING WITH THE ANALYSIS OF THE EXISTING HUMAN CAPITAL THROUGH A WELL-DESIGNED HR DATABASE. THIS IS CONSIDERED AS THE BACKBONE FOR ANY FURTHER REQUIRED ACTIONS THAT WILL BENEFIT THE SECTOR.”



AHMED EL-SAYED MOHAMMED
SECTION HEAD, REFINING AND PROCESSING DEP, EGPC

“ALL PETROLEUM SECTOR ENTITIES SHOULD BE RUN BY A SUCCESSFUL ECONOMIC MODEL WHICH SECURES THE DEMAND OF THE LOCAL MARKET AND MAINTAINS GOOD PROFIT AND SUSTAINABLE DEVELOPMENT FOR THE ENTITY.”



AMR ASHRAF
SENIOR ENGINEER – TECHNICAL OFFICE – MINISTRY OF PETROLEUM AND MINERAL RESOURCES

“THE EGYPTIAN OIL AND GAS SECTOR HAS VERY GOOD CALIBERS ACROSS ITS DIFFERENT COMPANIES - VARYING FROM SERVICES COMPANIES TO JOINT VENTURES - WORKING TOWARDS ONE GOAL, WHICH IS TO ACHIEVE THE MAXIMUM PROFIT FOR THE COUNTRY.”

MODERNIZATION PILLARS

UPSTREAM INVESTMENT ATTRACTION TO FUEL MODERNIZATION

BY SARAH SAMIR

The developments proposed by the Modernization Program would not be reachable without continuous investment. This crucial role led the Ministry of Petroleum and Mineral Resources (MoP) to dedicate a whole pillar within the modernization strategy for investment attraction..

SURVEYS AND STUDIES

In order to attract investments to unexplored areas, the MoP promoted seismic data acquisition on around 11,000 km of the Red Sea territorial waters. The Red Sea data collection is a multi-client project awarded by Ganoub El Wadi Petroleum Company (Ganope) to TGS and Schlumberger.

The companies were assigned to conduct geophysical data collection and 2D seismic data survey on the designated area in the Red Sea. The data collection comes in line with the agreement between the three companies, giving TGS and Schlumberger a minimum 15-year exclusive period of multi-client rights in a 70,000 km² area of Egypt's territorial waters in the Red Sea.

The Egyptian ministry sent nomination letters to international oil companies (IOCs) regarding the Red Sea bid round in order to discuss the new fiscal regime; agree on terms and conditions; and review block size, bid rounds frequency, and the areas of interest in the Red Sea.

In addition, the government proposed another multi-client project for collecting seismic data in the East Mediterranean Sea's open blocks. In this initiative, the ministry aims to motivate foreign companies to bid for the open blocks and take technical risks in the East Mediterranean fields.

Moreover, Egypt is preparing seismic surveys and re-evaluation of data in the Gulf of Suez in order to pave the way for new bid rounds in the area. This offers better clarification of the geological formation and

the basin, which supports boosting production in the region.

PAYING ARREARS TO IOCS

Looking at strengthening the trust relationship between Egypt and its investors and attracting new investments to the country, the MoP has been committed to repaying its arrears to IOCs, which has a major impact in the development of the upstream sector.

The ministry's debts to IOCs had been accumulating before 2012 until it reached \$6.3 billion. Yet, the Egyptian government managed to repay part of its debts, decreasing arrears to \$1.2 billion by the end of fiscal year (FY) 2017/18.

NEW AGREEMENT TERMS

In order to inject more money into the oil and gas sector, it was important for the MoP to revisit its agreement models. It was generally recognized that, to improve the prospects of investments - especially in frontier areas - new agreement models had to be explored. Considering that, the MoP has developed new agreement terms to be introduced.

E&P MARKETING

Enhancing transparency is another strategy used by the ministry to attract investments. In this line, Egypt plans to launch the Egypt Upstream Gateway (EUG). The new gate aims to market E&P concessions to attract bidders.

INVESTMENT DIVERSITY

Increasing investments from companies already operating in Egypt is an important achievement for the oil and gas sector; however, attracting new investors and having a diversified group of companies in the country is extremely beneficial to the industry's projects.

Having different investors in one E&P project paves the way to having different expertise shared, which increases the experience of the employees and boosts the efficiency of the project. Moreover, it allows the usage of diverse technologies and enables technology transfer, which is an important point to the Modernization Program.

The country is also looking forward to intensifying investments in the Western Desert after Eni discovered two oil findings in the Faghour basin. This investment increase will bring more scope to existing oil fields in the area and will compensate the natural production decline.

COLLECTING RESULTS

The Upstream Investment Attraction pillar will support the ministry to shorten the periods taken to sign agreements, increase transparency in choosing bidders, boost investments, attract new international investors, and increase oil and gas reserves.

Investments in the Egyptian oil and gas sector are expected to increase to reach a total of \$10 billion in FY 2018/19, as Minister of Petroleum Eng. Tarek El Molla previously told Egypt Oil & Gas, which will open new prospects for the entire value chain.



Red Sea Seismic Data acquisition completed over **11000 km**



Red Sea full time processing products (PSTM data) delivered in **Nov. 2018**

HAVING DIFFERENT INVESTORS IN ONE E&P PROJECT PAVES THE WAY TO HAVING DIFFERENT EXPERTISE SHARED, WHICH INCREASES THE EXPERIENCE OF THE EMPLOYEES AND BOOSTS THE EFFICIENCY OF THE PROJECT.

STRUCTURE REFORM: NEW GOVERNANCE CODE AND PROCESS REDESIGN

BY **MAI ELGABRY**

The Structure Reform is a single pillar in the Modernization Project whose benefits extend far to the other pillars. This core pillar binds them all together, entailing what makes the Modernization Project truly efficient. Through the structure reform, the Ministry of Petroleum and Mineral Resources (MoP) expects to create a more agile sector and demarcate roles for more efficient decisions.

The second modernization pillar's main objectives consist of demarcating sector roles, promoting organization restructure, improving sector governance, and optimizing the affiliates' portfolio. The remodeling process goes through all segments of the value chain, focusing on improving business policies as a whole and implementation measures in particular.

THE SECTOR BEGAN DEVELOPING THE NEW GOVERNANCE CODE TO APPLY GOVERNANCE BEST PRACTICES AND ENHANCE ITS EFFICIENCY AND ACCOUNTABILITY.

To enhance the sector's governance in light of international best practices, a new governance code for the sector under development to address ownership and board governance; risk management and internal control; shareholder rights and stakeholder relations; and transparency and disclosure. These assets merely establish a clear and coherent view for the industry and identify development initiatives.

The three main roles of the new structure are regulatory, policy and strategic setting, and operational,

WORKFLOW OPTIMIZATION

The optimization of workflow started within the sector's macro segments in collaboration with an international consultant. The objective is to redesign the main processes to streamline the process and identify key responsibilities and accountabilities, in addition to pinpointing measurable KPIs.

The sector began developing the new governance code to apply governance best practices and enhance its efficiency and accountability. The governance code draft was presented to the Steering Committee for approval.

"Segregating the roles and responsibilities is the main objective behind reaching an organizational structure," Eng.Tarek El Molla, Minister of Petroleum and Mineral Resources, previously told Egypt Oil & Gas.

Under the guidance of the Ministry of Petroleum and Mineral resources (MoP), intermediation schemes and specialized training programs for youth will be encouraged.

INTERMEDIATION SCHEMES AND SPECIALIZED TRAINING PROGRAMS FOR YOUTH WILL BE ENCOURAGED.

The reorganization of sector entities is identified as a key aspect to achieve optimized governance and help in the achievement of other pillars' success. With the structure reform, the program's team is benchmarking against world best practices, which opens the door for foreign investors and new prospects.

THE STRUCTURE REFORM HAS SET A BENCHMARK FOR INTERNATIONAL OIL AND GAS COMPANIES AND OPENS THE DOORS FOR FOREIGN INVESTORS.



THE THREE MAIN ROLES OF THE NEW STRUCTURE

Regulatory Policy & Strategy Operational Setting

HUMAN CAPITAL: THE INDUSTRY'S MAIN ASSET

BY SARAH SAMIR

Human capital is the basis of any industry. To accentuate the importance of human resources (HR) and increase its efficiency, the Ministry of Petroleum and Mineral Resources' (MoP) Modernization Project pays a special tribute to its employees through the third pillar of the program: the HR Management pillar.

TRAINING FOR DEVELOPMENT

The MoP is always keen to develop and empower the sector's employees via programs and trainings that prepare and make employees more efficient. Under the commitment to human resources (HR), the development of young professionals receives special attention as a long-term plan to nurture future leaders and guarantee the sustainability of the industry.

In order to support the sector's human capital, the MoP has encouraged many initiatives to develop employees through training programs, such as Al Amal program and Schlumberger's Technical Development Training Program.

In addition to that, the ministry also has its own initiatives. The Zohr Development Program, for instance, set an example for the development and utilization of HR. It has been running since August 2017 and has had a total of 74,695 participations, 287,874 training hours, and 35,122 participants.

Within the efforts exerted to develop human capital, the ministry has successfully implemented a health, safety and environment (HSE) mandatory training system; a tailored competency-based training (CBT) system to cover critical job roles in all field disciplines; and a quality competence assurance model.

Moreover, a competency management system was developed and fully aligned with a new model of joint ventures (JVs), creating agility and driving the organization through performance-based schemes. The JV Badr El-Din Petroleum Company (Bapetco) was chosen by the ministry to be the pilot and role model for the modernization of JVs, which includes enhancing

HR management systems, developing governance, and achieving excellence in operations.

MIDDLE-MANAGEMENT DEVELOPMENT PROGRAM

As a part of the Modernization Project's eagerness to empower young professionals, the MoP has developed the Middle-Management Development program. The program focuses on identifying, developing, and retaining oil and gas talents as well as preparing them to take higher responsibilities in the future – an important step towards creating future leaders.

The ministry launched the Middle-Management Development program in December 2017.

SAFETY COMES FIRST

In order to modernize the Egyptian oil and gas sector, it is important to revitalize the HSE culture and prepare employees to follow HSE standards. The HSE culture change initiative aims to prepare people to lead the petroleum sector towards higher efficiency in a safe and environment-friendly way. The initiative further aims to establish an integrated safety culture change program via a strategic roadmap to standardize HSE tools, processes, and practices.

For 2019, the MoP designed an HSE capacity-building program with investments of around \$1 million. The program, which started in January 2019 and will be concluded around October, will evaluate 70 professionals from the HSE and operations segments and choose top talented candidates to be considered as agents of change.

MODERNIZATION ACHIEVEMENTS

The MoP has been implementing changes and organizing events to develop the HR Management pillar. One of these changes consists of a new job description template.

The new template has new items listed, including job performance standards, financial and administrative authority, internal and external communication, working environment and hazards, as well as competencies.

Having a new model will allow the staff to understand their responsibilities and their duties, and will be a tool to prove effectiveness during companies' recruitment process. The new model is also useful in managing performance, developing workforce system, and planning succession.

Moreover, the ministry moved forward with the digitalization of HR management systems through the establishment of a human capital database. The database unifies employees through innovating methods, identifies staff in each company, recognizes the strong and weak points of each employee, and identifies risks and opportunities to develop the company.

On top of that, the Egyptian oil and gas sector is adopting the HR Program to prepare a statistical analysis on retirements for the upcoming five years for the whole sector, from 2019 to 2023. The analysis will help petroleum companies to be prepared with the right staff to fill the place of the retiring ones.

GLOBAL LEVELS

The HR Management pillar is an important tool to elevate Egypt's HR systems to global levels; increase transparency in evaluations and promotions; provide a work environment that encourages innovation; enable young talents to be in leading positions; and retain experts and talents in the sector.

AS A PART OF THE
MODERNIZATION PROJECT'S
EAGERNESS TO EMPOWER
YOUNG PROFESSIONALS,
THE MOP HAS DEVELOPED
THE MIDDLE-MANAGEMENT
DEVELOPMENT PROGRAM.

THE MINISTRY MOVED
FORWARD WITH THE
DIGITALIZATION OF
HR MANAGEMENT
SYSTEMS THROUGH
THE ESTABLISHMENT
OF A HUMAN CAPITAL
DATABASE.

BAPETCO'S JOURNEY THROUGH MODERNIZATION

Badr El Din Petroleum Company (Bapetco) has been chosen by the Ministry of Petroleum and Mineral Resources as a pilot and role model in the application of the Modernization Project in joint venture (JV) companies.

The government has taken this decision as the company had already made several achievements powered by implementing the Modernization Project, focusing on the pillars related to people development, procurement and tendering, as well as governance.

The capabilities of the huge staff in Bapetco and their flexibility to change made it an easy process to adapt to the changes. Moreover, Royal Dutch Shell, the foreign partner in Bapetco, showed great collaboration apart from the project.

The ministry is working in different levels to promote the modernization of oil and gas companies in Egypt. It is initially modernizing top-tier entities - such as the ministry itself, the Egyptian General Petroleum Corporation (EGPC), and holding companies - as well as JVs, from which Bapetco was chosen as pilot company.

ENHANCING DOWNSTREAM PERFORMANCE AND ENERGY EFFICIENCY

BY MAI EL GHANDOUR

In light of the Modernization Project, the Ministry of Petroleum and Mineral Resources (MoP) has decided to expand downstream infrastructure to attract more foreign investors and partners, in addition to introduce new strategies that will facilitate the downstream sector’s activities.

The attempt to improve downstream performance goes back to the need to enhance energy efficiency (EE). The Downstream Performance and Energy Efficiency pillar focuses on refining petrochemicals, transporting activities, and distributing products. The complete cycle of this process directly affects the value chain of the oil and gas sector.

KEY ELEMENTS

This pillar’s objectives set an optimal utilization of assets and a greater integration of downstream activities. Through drafting a strategy for the production and distribution of petroleum products, these objectives are ensured to be met. The program’s team is developing a plan to implement any project with the best professionals and improve EE, awareness-raising, and energy conservation in the sector.

Establishing a database for the production and distribution of petroleum products will help identify patterns and opportunities. This institutional framework for improving the management of the EE system will help attract investments in the production and distribution of petroleum products, increase productivity and profitability, reduce imports, increase foreign exchange savings, and reduce production cost by refining and production facilities, as well as emissions from production processes.

DOWNSTREAM PERFORMANCE AND ACHIEVEMENTS

The year of 2017 was a pivotal year that paved the way to many decisions and actions regarding the downstream performance. A feasibility study for several projects was completed to maximize asset efficiency and increase revenues. Energy consumption rates of the sector’s companies were limited to help identify the companies that

consume 80% of the sector’s total consumption and focus on developing them. Also, sector companies began collaborating to optimize the utilization of assets and human resources to achieve the highest profitability.

In 2018, the sector began bearing the fruit of those decisions. A specialized unit for the management of EE was established in the Egyptian General Petroleum Corporation (EGPC), holding companies and subsidiaries. Other projects were carried out to improve the performance of the sector with total additional revenues of \$125 million annually. In addition, some measures were taken to improve the efficiency of the energy consumption in refineries with a total savings of about EGP 300 million annually.

INCREASING UTILIZATION RATES OF PETROCHEMICALS PLANTS

Due to the lack of C2/C3 hydrocarbon mixture supplied by GASCO complex, existing petrochemical plants such as Sidi Kerir Petrochemicals Company (SIDPEC) and ETHYDCO are facing a drop in their revenues, while EPC is supplied with Ethylene from SIDPEC. Therefore, the three companies are facing a problem of feedstock shortage. Looking at securing the deficit quantities of Ethane, ECHM developed a program to import Ethane through the unutilized EPC platform pipeline. The program aims to increase the utilization rates of downstream activities and fulfill the integration of SIDPEC, ETHYDCO, and EPC.

IMPLEMENTATION OF EE HIGH/MEDIUM COST PROJECTS

The program aims to implement no/low cost EE projects through introducing new/oriented

THIS PILLAR’S OBJECTIVES SET AN OPTIMAL UTILIZATION OF ASSETS AND A GREATER INTEGRATION OF DOWNSTREAM ACTIVITIES.

EE technologies, system optimization, and full energy audits.

In cooperation with the European Bank for Reconstruction and Development (EBRD), two EE grant studies were conducted: the Suez Oil Processing Company’s (SOPC) Full Energy Audit and the System Optimization and GASCO’s Waste Heat Recovery. The bank availed soft loans of \$200 million for SOPC and another \$200 million for GASCO, and both were approved by the government.

MOVING FORWARD

Egypt is finally starting to realize its downstream industry potential and effectuate it into action through adding to the oil and gas resources. As the Modernization Project pushes the country forward, a significant part of its success goes back to this particular pillar as its return on investment (ROI) through adding to the oil and gas resources is a significant contributor to the country’s economic growth and development.

THE INSTITUTIONAL FRAMEWORK FOR IMPROVING THE MANAGEMENT OF THE EE SYSTEM WILL HELP ATTRACT INVESTMENTS IN THE PRODUCTION AND DISTRIBUTION OF PETROLEUM PRODUCTS.



Implementing projects to improve the efficiency of the refinery of **SOPC**, with a total investment of **\$ 200 million.**



Implementing energy efficiency projects with **GASCO**, with a total investment of **\$ 200 million.**

UPSTREAM PERFORMANCE PROGRAM AS A ROADMAP

BY DINA EL-BEHIRY

The upstream sector represents the backbone of the oil and gas industry, to which the success of the whole value chain is related. That poses great responsibility to the Upstream Performance pillar of the Modernization Project, whose developments include upgrading the performance of the upstream sector in a way that does not depend only on new explorations, but also on improving the existing wells and discoveries. Through the adoption of new technologies and investment attraction, the Ministry of Petroleum and Mineral Resources (MoP) looks at boosting production, performing new exploration activities, and improving efficiency to secure the local market needs, reduce imports, and reach sustainability.

Since the launch of the Modernization Project in 2016, the MoP has looked at upgrading the sector's performance by identifying opportunities to increase production, and developing operational plans to put new discoveries on the production map. For this, the ministry has built technical teams to provide permanent technical support to companies and promote successful experiences that could be expended in the future.

PRODUCTION INCREASE

Under this pillar, the ministry has also overcome many factors affecting Egypt's daily production, including natural production decline – which reached 25% in the Gulf of Suez and 40% in the Western Desert – high water cut in some wells, and limited exploration in some areas.

The ministry's efforts have been fruitful. In 2018, crude oil production increased with incremental 11,000 b/d, a 2% increase compared to the precedent year;

condensates with incremental 2,000 b/d, a 2% increase; and natural gas with 1000 Mmscf/d, an 18% increase.

The Modernization Project's upstream team is aiming to increase daily production with 30,000 b/d of oil and condensate, which is a 6% increase, and 1,600 Mmscf/d of natural gas, representing a 25% increase, by June 2020.

EFFICIENCY IMPROVEMENT

The Upstream Performance pillar's approach to enhance the sector's efficiency relies on the adoption of new technologies through technical teams. The general objective is having a unified database and data analysis, standardization and guideline for contracts and best practices, shared knowledge, and key performance indicators (KPI).

The technologies that have already been applied showed a variety of positive results, including the enhancement of asset integrity. In 2018, the program's team has finalized the management of change (MOC) guideline, which will be ready for publishing in Q1 2019, and the risk assessment management system (RAMS) guideline, which is also expected to be published in the same period. For 2019, the ministry also expects to have the risk-based inspection (RBI) guideline, the CHEMICAL management strategy, and the pipeline integrity management system (PIMS) ready.

Additionally, the project has made great progress in 2018 on analysis for database for artificial lift, which will further receive some KPI for analysis. In the same year, the upstream team established the dismantle

inspection and failure analysis (DIFA) team, and had successful cases and best practices knowledge shared. For 2019, the upstream team expects to complete the contract guideline for all artificial lift types, have the DIFA unified report for all vendors, and have data analysis from unified data collected.

On operational energy efficiency, 2018 witnessed the conclusion of the overhead transmission line (OHTL) report. For 2019, Egypt expects to issue the generator report as a guideline, in addition to having turbine best practices and cost reduction in consumable parts.

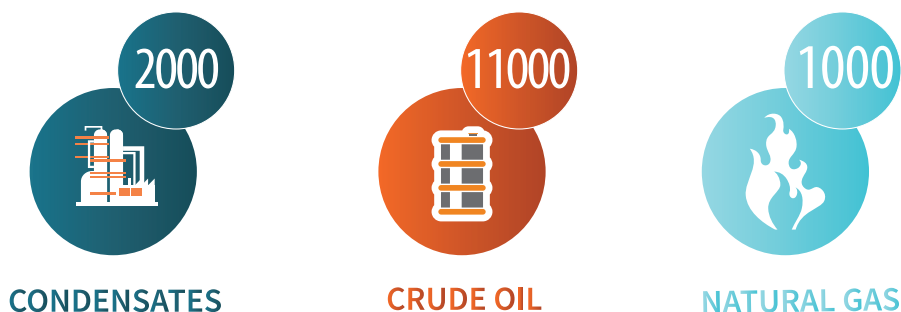
SUSTAINABLE GROWTH

Maintaining the momentum generated by the recent new upstream discoveries, and upgrading the upstream sector as a whole is crucial to achieving sustainability and further economic development. With the continued collaboration between the MoP and international oil companies, and efforts from all the sector's employees, there could be considerable opportunities for higher growth rates, which in return will play a major role in maintaining the solid economic base that Egypt aims to achieve.

THE TECHNOLOGIES THAT HAVE ALREADY BEEN APPLIED SHOWED A VARIETY OF POSITIVE RESULTS, INCLUDING THE ENHANCEMENT OF ASSET INTEGRITY.

THE PROJECT HAS MADE GREAT PROGRESS IN 2018 ON ANALYSIS FOR DATABASE FOR ARTIFICIAL LIFT.

Daily Production Incremental Increase (barrels) (YoY) 2018



EGYPT TO BECOME A REGIONAL ENERGY HUB: **A NEW ERA**

BY **DINA EL-BEHIRY**

As a hydrocarbon-rich country, the potential of the Egyptian oil and gas sector goes beyond its local market. Thanks to the development of new oil and gas projects – in addition to the country’s existing transportation, processing, and export infrastructure – monetizing supplies from and supplying to neighboring countries became a reachable goal.

Under the Oil and Gas Hub Strategy pillar of the Ministry of Petroleum and Mineral Resources’s Modernization Project, Egypt looks at expanding its potential and taking advantage of its strategic geographical position to become a regional energy hub. For this, the ministry has appointed a Hub Strategy team, with the assistance of an international consultancy and the support of a governmental committee, to identify best options and establish a concrete strategy for the pillar’s activities.

WHY EGYPT?

In order to understand Egypt’s plan to become an energy hub, it is necessary to understand first why the country is a perfect match for the position.

Egypt has all the necessary assets to be an active industry player and shape the region’s oil and gas sector. Its geographical location makes the Arab Republic a strategic link between the Middle East and North Africa (MENA) region and Europe, and the country already has the necessary infrastructure to transport oil and gas from and to its neighbors.

The Suez Canal and the Suez-Mediterranean (SUMED) pipelines represent a successful showcase of Arab cooperation over 40 years and are a key piece of the country’s value proposition to international investors. SUMED consists of two parallel pipelines of 42” diameter and 320-km length linking Ain Sukhna in the Red Sea to Sidi Kerir in the Mediterranean. It has a tank farm of 20 million barrels at each terminal with total storage capacity of 40 million barrels, capable of accommodating shipments of 20 very large crude carriers (VLCCs).

Another remarkable achievement is the MoU between Egypt and the European Union (EU), which was signed in Cairo in April 2018. Under the MoU, Egypt and the EU will seek developing their cooperation during the period of 2018-2022, especially in the oil and gas sector - upstream, midstream, and downstream.

The agreement will assist Egypt’s role in becoming and sustaining an oil and gas hub in the Mediterranean, as it will include technical assistance and know-how of projects aiming to raise network capacities. Both sides intend to collaborate on promoting EU-Egyptian common efforts in strengthening Egypt’s position as a hub

through workshops, conferences, and enhancing business exchanges.

On top of that, Egypt resumed natural gas exports to Jordan in October 2018 with trial quantities to reach the contracting quantities by 2019. The country has also started integrating the existing gas reception facilities in Aqaba and Ain Sokhna to ensure supply sustainability.

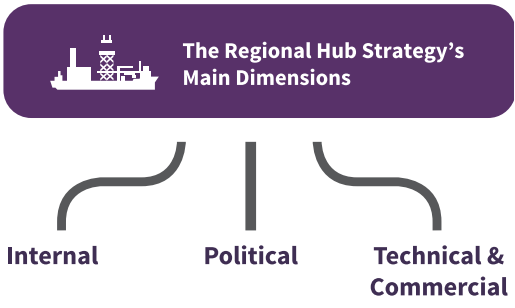
In addition, Egypt has engaged in a number of projects to expand its infrastructure. In March 2016, Egypt signed a memorandum of understanding (MoU) with Jordan and Iraq to transport Iraqi gas and crude to Egypt through Jordan. In April 2016, another MoU was signed with Jordan to cooperate in the field of energy in general and natural gas in particular. In September 2018, the country signed an intergovernmental agreement to promote the construction of a direct submarine pipeline to transport natural gas from Cyprus to Egypt for processing before being shipped to neighboring countries or used in domestic market.

Egypt also signed agreements with Kuwait Oil Company, Iraq Oil Company, and Saudi Aramco for cooperation in the field of trade exchange; and the ministry achieved impressive progress in offering proposals for the best ways to link the fields in the Eastern Mediterranean to the liquefaction facilities in Damietta and Idku.

Parallel to it all, the ministry has ongoing discussions for the liquefied natural gas (LNG) bunkering business in Egypt, including the commercial agreement for bunkering floating storage units as a fast-track option in the Suez area; and the country makes extensive progress in the establishment of the Sonker Bunkering Company in Port Ain Sukhna.

LAW FOR NATURAL GAS MARKET ACTIVITIES REGULATIONS

In August 2017, Egypt laid a cornerstone towards becoming an energy hub with the issuance of its new natural gas law, which had its executive regulations issued in February 2018. The new law is legislated to make it easier for the government to secure its needs from natural gas and encourage industrial growth and investment. The law gradually decentralizes the Egyptian gas market and opens it up for private investment in trading, storing, selling, and distributing natural gas.



Under the law, private companies will pay a set fee for the use of public transit facilities and pipelines. Profits gained from these fees will be used to expand existing pipelines and encourage investments in gas infrastructure and transportation networks. The activities are regulated by the Natural Gas Regulatory Authority, which is an independent regulatory body that supervises the natural gas market and issues licenses for the importation, transportation, and sale of natural gas.

ONE STEP AWAY

Egypt’s geographic position, infrastructure, and recent projects certainly give the Arab Republic great advantage in its goal of becoming a regional energy hub. Yet, the ministry has exerted extensive efforts to finalize its oil and gas strategy report, and grant all the necessary approvals throughout the plan’s implementation in order to accelerate its results and increase its prospects. Being a hub does not only benefit the oil and gas sector, but also represents a major step towards Egypt’s Vision 2030, which also contributes heavily to securing the country’s reserves of foreign currency and improving the national economy.

EGYPT HAS ALL THE NECESSARY ASSETS TO BE AN ACTIVE INDUSTRY PLAYER AND SHAPE THE REGION’S OIL AND GAS SECTOR.

DECISION SUPPORT AND DATA FLOW

BY MAI EL GHANDOUR

The petroleum sector, seen through a modernized economic lens, devise a new vision of an Egypt that can achieve giant oil projects, deliver new dimensions of innovations, and participate in making decisions that shape the future of the world's energy.

As the ministry sets up a comprehensive information system and communication network under the Decision Support and Data Flow pillar of the Modernization Project, all entities of the petroleum sector will be linked to help deliver Egypt's Sustainable Development Strategy (Vision 2030).

The new system envisions linking holding companies and their subsidiaries, facilitating communication and information exchange, and making daily reports and production data available and up-to-date. As a first step towards better communication and transparency in the sector, the ministry has launched a communication portal for the sector's intranet.

JOURNEY TOWARDS DIGITALIZATION

Digitization is an important tool for reporting and decision-making processes across the sector. Within the Modernization Project, the implementation of digitalization began with developing a unified strategy that empowers the concepts of digitalization and automation. It was a compilation of many phases that pushed the petroleum sector one step closer towards a modern, digitalized world.

For years, the Egyptian General Petroleum Corporation (EGPC) received production data from affiliates on a daily basis using all sort of manual mechanisms. With automation, a single process that took 2-3 hours to be completed, now takes minutes, minimizing human intervention in a way that empowers the use of digital technologies.

Subsequently to that, enterprise resource planning (ERP) systems that interconnect all processes within an entity and from affiliates to state-owned enterprises (SOE) started to be studied. This drives towards digitization, especially when the implementation is run based

on the industry's best practices with regards to business processes and system application.

However, digitalization is nil without communication. To actually open the path towards digitalization, communication platforms were no longer a luxury, they were needed to enhance data communication and knowledge sharing between all sector employees. With this concept, Egypt's Petronet was born

The ERP with up-links to the Ministry Information Center will help plan and manage the petroleum sector's resources and assets. This official gateway will streamline communication and collaboration among sector employees and build a reliable and precise decision support system to support the Ministry of Petroleum and Mineral Resources' (MoP), SEO's, and other companies' decisions. The implementation across SOEs is proceeding successfully and is under roll-out across affiliates.

SECTOR'S ICT STRATEGY

The information and communication technology (ICT) strategy facilitates the realization of the sector's vision through its alignment with business strategies. An important aspect of the ICT strategy is information technology and strategic planning working together.

The ICT vision is about making a real and sustained difference in Egypt's petroleum sector by unleashing the power of digital technology. It should adhere to a systematic and solid approach based on four key pillars: integrate and simplify; enable digital integrity; build people capability; and deliver functional efficiency. The ICT strategy facilitates the realization of the

sector's vision through the alignment with its business strategy using the latest digitalization and automation industrial standards.

With the strategy, small and medium companies can have a benchmark to build their technological environments upon. It is also a baseline for larger entities to build over and ensure what is best for the business and the industry.

In addition, the ICT strategy is a gateway towards unity of policies and laying out a standard for all sector entities to follow with regards to ICT - an aspect that was never before standardized or addressed to unite.

PROMOTING SECURITY

Being considered as an industry that is part of national security, a strategy that puts security into consideration is a protection not just to the many investments put into it but also to Egypt and all its global partners.

ERP IMPLEMENTATION

The program's team has finished the first stage of the resources and assets management system for both EGPC and the Egyptian Natural Gas Holding Company (EGAS). The implementation of phase two began on December 12, 2018 and was completed. Phase three is currently underway.

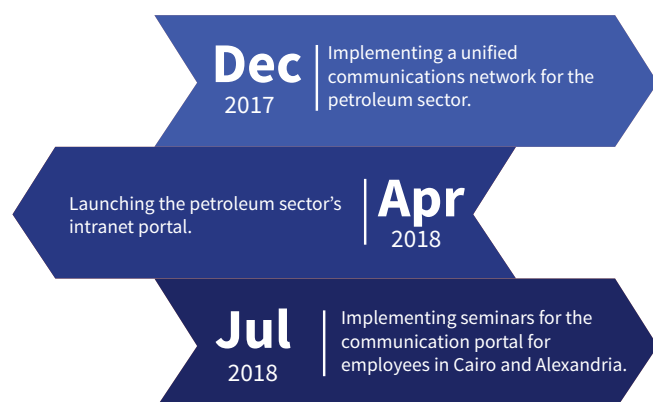
For EGAS, a major milestone was achieved with the ERP Go-Live successfully launched on January 27, 2019 for inventory; purchasing; projects and planning; internal and external trade; production; and finance. Phase III is scheduled to finish by July 2019.

Meanwhile, GANOPE is looking for methods to improve its current SAP implementation.

ERP Achievements in 2018



Communication Networks





IN
PARTNERSHIP
WITH

