

The Regional Media on Upstream Oil Industry

DRILLING

M A G A Z I N E

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Education vs Training

An Introduction of Regional NOCs

World Petroleum Congress
Bridge to Our Energy Future

The Greatest Gas Fields of the Region



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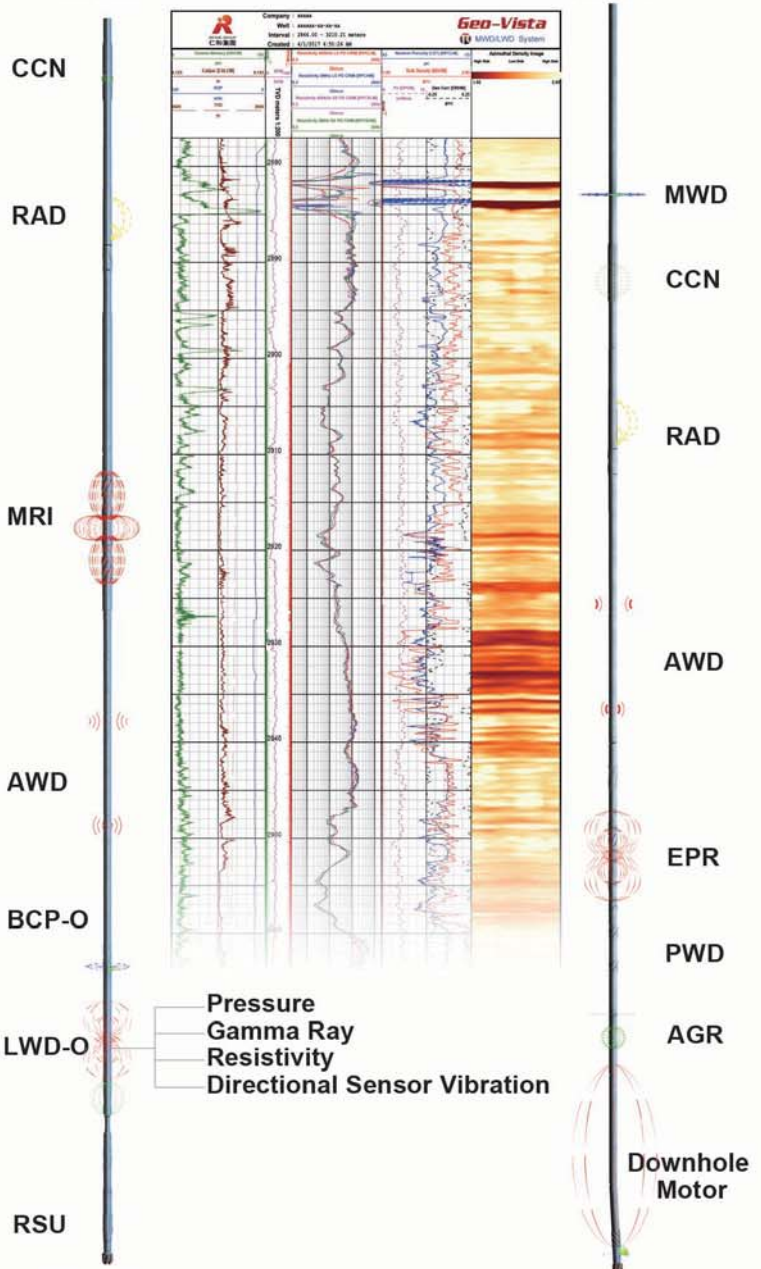
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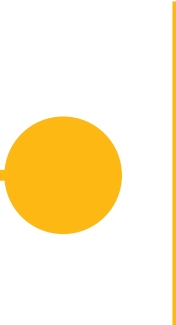
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34



Merger and Acquisition

54



NOCs and a Glance at Training Procedures
in the Region

74



World Petroleum Congress Report

INDEX

Administration Manager Note	6
World News	10
Regional News	12

Info & Trend

Global Rig Count	16
Regional Rig Count	18
Greatest Gas Fields of the Region	20
Natural Gas Statistics of the Regional Countries	28

Cover Story

M&A; A Path to Improve	36
M&A in the Oil Industry	37
Value Creation and Capture from M&A in Upstream	40
Human Resources and Organizational Challenge in M&A	44
M&A in upstream industry	46
Merger and Acquisition Strategies	48
Legal and Contractual Challenges for M&A of Companies	50
M&A in Rig Operation Industry	52

Regional Focus

An Introduction of Regional NOCs	56
Training; a Concern to Notice	68

Event focus

World Petroleum Congress Report	76
An Interview with WPC President	80

Paradigm-Shift in the Oil Industry

Data-Oriented Era Requirements

Amir Abedpour
Administration Manager



In the new paradigm and atmosphere, “Data” is no longer a template made by zero and one (logical 0 and 1), but it is the new digital knowledge atom. This meaning of “Data” can be qualified by considering new terms created by “Data” and this paradigm shift has occurred over the past three decades. The main concepts, justifying the recent transition from “Computing” to “Data”, are called Big Data which itself is a product of “Internet Data” or “IoT”.

We should say that net data is one of the subsets of the “IoT” or “Internet of Things” and the producer of “Big Data”.

“Internet of Things” is also considered as one of the new paradigms that will take place by 2020, which is expected to connect more than 16 billion devices around the world by 2020.

“Big Data”; a New Paradigm in the Oil Industry

According to the LinkedIn in 2017, data management is one of the vital skills for organizations based in the Middle East. According to a new study by this company, statistical analysis and data-mining are important for employers and this degree of significance is clearly evident across the world and the Middle East.

Even though the term “Big Data” is more commonly used in so-called “softer” industries in order to direct people’s behavior, tendencies, feeling, and so on, the concept of “Big Data” – which means volume increase, variety and speed of data- is quite familiar to the actors of the oil and gas industry. In other words, the oil and gas companies create a lot of information in different processes by using all useful technologies.

Processes for exploration, development and production of oil and gas resources always produce a large amount of data, and the volume of these data is increasing day by day. By using modern solutions regarding the information acquisition, data processing and storage as well as upgrading of personnel and equipment, today’s volume of data has grown significantly over the last few years, and this trend will continue to accelerate more rapidly than ever before.

With this in mind, today, major oil and gas companies

are facing the process of “Information Development” and they have no choice but taking steps to control the integrity and management of these great data by employing a precise strategy and professional and intelligent tools. As an example, it was reported in the news that Microsoft and Halliburton have announced that they intend to establish a strategic alliance to transfer digital information in the oil and gas industry through the creation of the first E&P cloud system. This links the field to the office as Microsoft specializes in cloud and digital conversion by engineering knowledge, and Halliburton’s service in exploration and production (E&P) will create a massive transformation in the oil industry.

However, even though the digitization process has begun later in the oil and gas industry than the other industries, and it has not even reached the desired level in some countries, it is expected that Data and Information Technology will have a large share of growth, employment and development in the coming years. So these leading companies will introduce a new generation of oil and gas production and extraction through a huge investment in this sector.

It should be said that if we look carefully at the situation of the oil industry in the regional countries, due to the high research and development costs, future is far from reality for the regional countries in this lucrative and attractive industry. However, the important thing is that the intelligentsia of the oil industry should not miss the opportunities of paradigm shift. Taking advantage of these opportunities requires institutionalization of perspectives in the organizations. Unfortunately, this is rarely seen.

The requirements of perspectives are also the focus and use of strategy, vision and data-driven ideas in the business. We, in the Parsian Upstream Development (PUD) group, have determined our main strategy to break the prevailing information monopoly on the upstream industry while producing and publishing high quality data. Since 2015, it has entered into this field as a media-content collection and has seen tremendous developments in the field of production and publication of information in the upstream industry. We hope to con-

tinue this trend faster than before with the support of audiences and experts.

Undoubtedly, one of the requirements of suitable growth and sustainable development is following new paradigms in the region and the world. Therefore, in order to achieve this goal, we must firstly answer this basic question: "What are the new paradigms governing the world oil industry? Moreover, where is the ecosystem of knowledge and technology following? The exact answer to this question can ease the path for the main players of this industry in the region.

Firstly, we should point out that organizations could be divided into three categories. The first are the "leading" companies and organizations. These have a high innovative power and they lead the industry in order to make a big development and change.

The second are the "provident" organizations that can predict the future changes through their own current situation. Based on these predictions, they are able to provide an appropriate condition for themselves.

In such a situation, the success of the "provident" organizations relies on the change predictions about the "leading" organizations.

The third organizations are those that cannot be either a "provident" or a "leading", they certainly do not have any suitable planning and they must always wait for events and incidents that have never been solved.

The Golden Opportunity during the "Paradigm Shift"

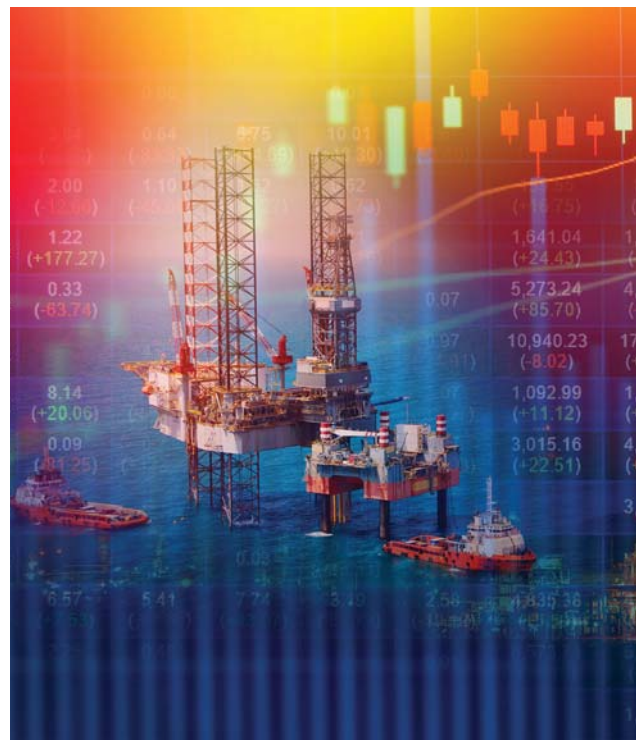
Another important thing is that leadings and providents should not neglect, is that the opportunity brought up by the "paradigm-shift" era. When a new paradigm appears, the abilities that are built upon the past rules will be eliminated and everyone, regardless of their place in the previous paradigm, must start from the starting point. Thus, groups -that there have never been any sign of their names- find a chance to compete and even win versus large experienced groups.

More importantly, the paradigm shift is a special period for the competition and triumph of the industry's new-borns against the pioneers as everybody needs to start from the zero point. In addition, of course, there is no doubt that the active companies in the region (if they wish) are able to be successful provident and help the countries' economic growth and employment.

New Paradigms in the Business Atmosphere

Nowadays, the "Data" instead of "Oil", is referred to as the most valuable source in the world. Britain's Economist Magazine, in one of its recent figures, has considered data as the new crude petroleum and it has identified the data-oriented economy as an emerging strategic

opportunity for countries. Economist believes that oil is not the world's most valuable resource anymore and oil has been replaced by data in the current situation. Regarding this, the Economist writes "A century ago, oil was the most valuable resources in the world; however now, data is the most valuable source of the world instead of oil. As a result, the five giants of the cyber world (Google, Amazon, Apple, Facebook and Microsoft) are the most valuable firms in the world today as their profits are enormous. In total, they only earned a net profit of over \$ 25 billion in the first quarter of 2017. Of course, half of all dollars spent online in the U.S have reached Amazon. Last year, almost all revenue growth in the digital advertising industry, all belonged to Google and Facebook." The point in this news is now just the \$ 25 billion earned by five cyber giants within three months. However, the point is that why data has become the most valuable resource? The scientific answer to this question shows the paradigm shift happened in the business environment. In the last half century, several paradigm changes have taken place in the international business environment, each of which has led to a revolution in the industry and the economy, and has totally changed the business model. Around three decades ago, a paradigm shift in computer networking began and then the computer revolution happened that turned companies such as Microsoft into a symbol of this era. After digitizing the various arenas, the internet Revolution created a new paradigm that companies like Google could be a symbol of that era, and today the business environment in the world is focused on the abstract concept of data.



NEW



VS





World NEWS

US Active Rigs Showing a Growth after weeks of declining

After several weeks of decreasing, the US active rig count rose by five this week according to the Baker Hughes rig count statistics. Although drillers idled one of the inland water rigs, both onshore and offshore rigs rose by three. There are now 940 rigs actively drilling for oil and gas in the US.

A New Brazilian-Norwegian Agreement; Petrobras and Statoil Partnership

The two great and famous Brazilian and Norwegian oil companies, Petróleo Brasileiro SA and Statoil have signed a new agreement in order to complement the partnership they already have in Brazil, looking forward to increase and enhance natural gas operations, due to a securities filing on Friday.

As Petrobras, the Brazilian part says, this new agreement is related to and acknowledging the plan to increase oil recovery rates at mature fields in the Campos basin and has the aim to optimize natural gas production, particularly in

the BM-C-33 area in Campos. Due to this fact, the agreement includes a provision for Statoil to share Petrobras gas infrastructure at that basin.

SPE OOA 2018; 32nd Offshore Achievement Awards Is Now Open

The Society of Petroleum Engineers (SPE) Aberdeen Section has now opened entries for the 32nd Offshore Achievement Awards (OAA). It is worth mentioning that the SPE Aberdeen Offshore Achievement Awards (OAA) is the biggest and longest established oil, gas and renewables industry awards for the UK offshore energy sector, covering all aspects from supply to upstream operations and offshore renewables.

It can be said that the categories have remained the same as the to last year's structure, except a new category which has been created by combining the two categories named Safety Innovation and Environmental Innovation awards. The name of the new category would be the HSE Innovation. The 2018 categories include Emerging Technology, Innovator, HSE Innovation, Collaboration, Export Achievement, Outstanding Skills Development, Young Professional, Above & Beyond, Great Company –

SME, Great Company – Large and Significant Achievement.

A New Generation of SPACE; Archer Introduces

Archer has launched a new generation of SPACE ultrasound imaging and measurement services, which apply ground-breaking ultrasonic techniques such as phased-array beam-forming to enable true spatial understanding of the downhole environment.

The launch introduces SPACE Vernier, a service designed to maximize well life by measuring the internal and external dimensions of the entire wellbore to generate statistical analysis of localized damage and systemic corrosion. The technology features a unique no contact design, which eliminates the risk of damage to the well tubing.

As part of the launch Archer has released a rebrand and technical upgrade of its original SPACE technology. SPACE Focus (formerly Forward Viewer) can now operate in temperatures of up to 135°C and pressures of up to 7250 psi. SPACE Panorama (formerly Azimuthal Viewer) is now suitable for 150°C and 15000 psi environments and is also available in a 2 1/8in size, making it suitable for a wider range of downhole applications.

Collaboration between Weatherford and Intel on Digital Oilfield Technologies

Weatherford International plc joined Intel Corporation at the IoT Solutions World Congress in Barcelona to showcase the collaboration between the oilfield services provider and the technology giant, and to demonstrate the benefits of bringing Internet of Things (IoT) technologies to the oil field. Colin Tait, director of Information Technology at Weatherford, stood alongside Jonathan Ballon, V.P. in the Internet of Things Markets and Channels at Intel Corp., during Ballon's keynote on day one of the conference. The executives discussed how IoT-enabled oilfield devices can improve the efficiency and profitability of production operations, from surface equipment to the back office.

As a use-case example, the companies demonstrated how data collected by sensors on production equipment in the field can be transmitted to the cloud, or to a data center, by the Weatherford IoT gateway. The Intel Secure Device Onboard service is used to securely onboard sensors and the Weatherford IoT gateway to Intel Wind River Helix Device Cloud for device management. After flowing through the gateway, sensor data can be visualized and analyzed using the Weatherford ForeSite production optimization software. The ForeSite platform, released by Weatherford in May 2017, connects and analyzes data from across the production ecosystem to maximize asset performance.

Unconventional Reservoir Drillers Need a More than 50\$ Price for Oil

Although Shale drillers and oil sands producers have experienced some healthy profits this year, there is no doubt

that they can be in a good situation only by having an oil price of more than a 50\$/bbl.

That's the conclusion of a Moody's Investors Service study of 37 exploration and production companies in the U.S. and Canada. It used a measure of how efficiently cash is generated to cover the costs of leasing drilling rights and boring wells, and still have enough left over to invest in future projects.

"Companies will be able to demonstrate meaningful capital efficiency, measured by the leveraged full cycle ratio, only if the West Texas Intermediate oil price is above \$50 per barrel and the Henry Hub natural gas price is at least \$3.00 per million British thermal units," the analysts said.

A New CEO For Chevron; Electing the Chairman of the Board

Chevron Corporation has announced that its board of directors elected Michael K. Wirth as chairman of the board and CEO, effective Feb. 1, 2018. Wirth, who is currently vice chairman of the board and executive V.P. of midstream and development, succeeds John S. Watson, who will retire from the company and its board on Feb. 1, 2018, after 37 years of distinguished service, including eight years as chairman and CEO.

"Mike is a proven leader who is ideally suited to lead Chevron into the next chapter of our history," said Watson. "He has the right values, knowledge and experience, and has established a strong record of accomplishment in his 35 years with the company."

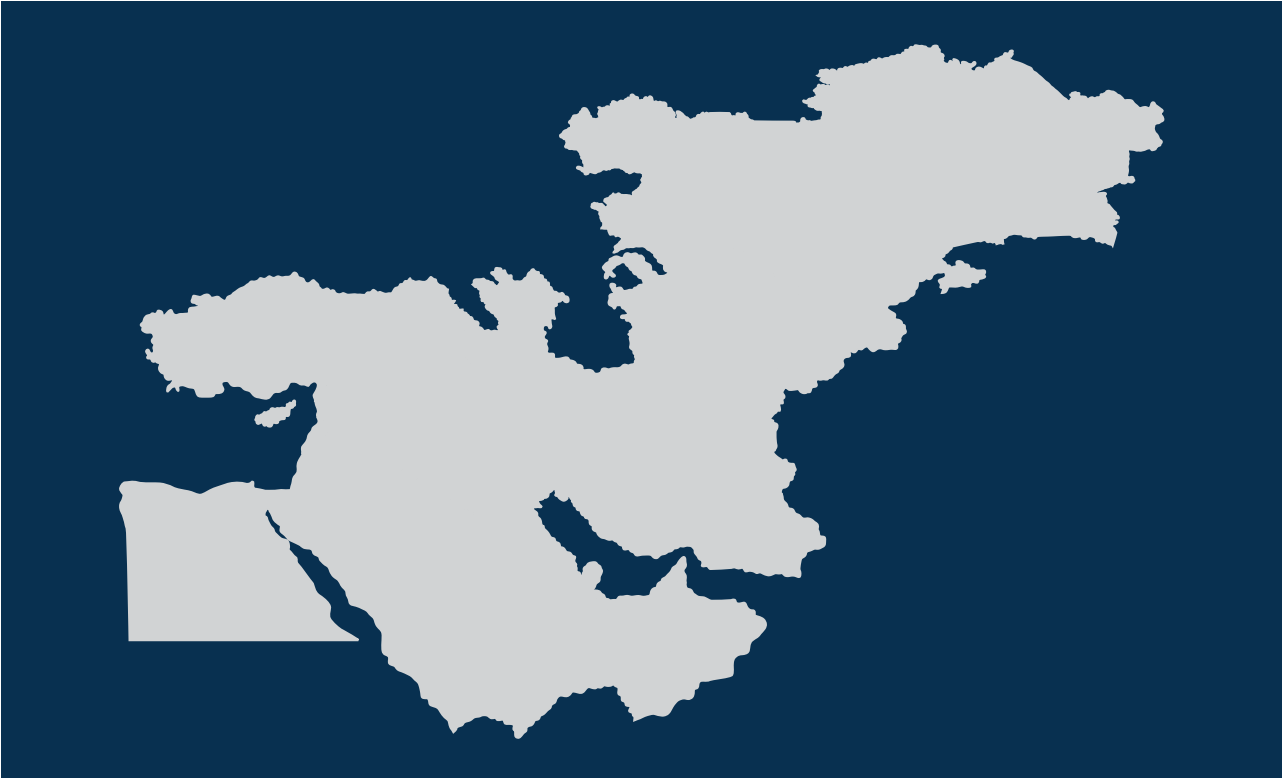
Wirth, 56, said, "I appreciate the confidence that John and the board have placed in me. Chevron has a proud 138-year history of developing the energy that improves lives and powers the world forward. I am honored to have been selected to carry on that tradition.

"Under John's leadership, we've developed legacy assets in Kazakhstan, Australia and the Permian basin that will underpin our portfolio for decades to come. John will also be remembered for his plain-spoken and principled views on company business and energy policy matters," Wirth added.

Petrovietnam University Chose e-Drilling as a Partner to Drive Digitalization in Vietnam

eDrilling, a provider of drilling and well performance solutions, and Petrovietnam University, the special public University with the mission to carry out high-quality research and training for the development of human resources of Vietnam National Oil and Gas Group (Petrovietnam), has signed a Memorandum of Understanding (MOU) for a long-term engagement to drive the digitalization of drilling operations in Vietnam.

eDrilling will provide their suite of software solutions, ranging from planning, through training, real time operations, analysis, to learning.



Regional NEWS

The Beginning of the Production from Oman Khazzan Oil Field by BP

The Ministry of Oil & Gas of Oman and BP have announced that production has begun from the giant Khazzan gas field, which is operated by BP in partnership with Oman Oil Company Exploration and Production.

Bob Dudley, BP Group Chief Executive, commented, "The start of production from Khazzan, BP's sixth and largest major project start-up so far this year, is an important milestone in our strategic partnership with Oman. With further development already planned, this giant field has the potential to produce gas for Oman for decades to come."

BP expects to start-up seven upstream major projects in 2017 – making it one of the most important years for commissioning new projects in BP's history. These seven projects are expected to make a significant contribution to the 800,000 barrels of oil equivalent per day of production that BP expects to add by 2020.

Phase 1 of the Khazzan development is made up of 200 wells feeding into a two-train central processing facility. Phase 1 production is expected to plateau at 1 billion cu ft

of gas per day (bcf/d).

After Two Years, Chevron is Back again in Drilling in Iraq Oil fields

U.S. firm Chevron drilled its first exploration well this month in Iraqi Kurdistan after a two-year break, industry sources said, signaling its confidence in the area despite an international row over region's independence referendum. Chevron, the second largest U.S. oil and gas company, drilled the well in Sarta block, north of the regional capital Erbil, the first such well since the second half of 2015, two industry sources told Reuters.

Chevron started drilling its previous exploration in Sarta in late 2015 and completed it in early 2016.

Exxon Mobil, the world's largest listed oil and gas company, pulled out of half of the six exploration blocks it operated in the Kurdistan region late last year.

Iran hopes to sign \$15bn worth key upstream deals by March 2018

NIOC wants to conclude new contracts worth \$15bn with international companies to develop some of its' most

important oil and gas fields, the state-owned company's managing director has been quoted as saying in a media report.

"It is estimated that new oil contracts worth over \$15 billion will be signed with international companies by the end of this Iranian year (March 20, 2018)," Ali Kardor, who is also the Islamic Republic's deputy oil minister, told IRNA.

Negotiations for the development of Phase 11 of South Pars, Azadegan oilfield and South Pars oil layer are in an advanced stage, Ali Kardor, was quoted by IRNA as saying.

"The fields are on priority list and the Ministry of Petroleum emphasises their development, as they are shared fields," Kardor added.

The official also noted that the tender for Azadegan was going to be held soon with international firms competing for it. IOCs including France's Total, Malaysia's Petronas and Japan's Inpex, have presented technical surveys for the development of the Azadegan oilfield, Kardor revealed.

He went on to say that Royal Dutch Shell, Italian major Eni and CNPC, China's largest integrated energy company, are the other contenders for the oilfield.

Is Shell Going to Exit Iraq's Majnoon Field?

Royal Dutch Shell will invest more in Basrah Gas Company (BGC) in Iraq, the super-major told international media on Wednesday, hours after reports broke that it was preparing to exit the Majnoon oilfield.

"In May 2017, the Ministry of Oil in Iraq applied the performance penalty and remuneration factor on the Shell operated venture, the Majnoon oilfield, which had a significant impact on its commerciality," a Shell spokesman told Reuters. "By handing over Majnoon operation to the Ministry of Oil, Shell will be in a stronger position to maximise value to the government of Iraq and its people as well as our shareholders by focusing its efforts on the development and growth of [BGC]." Shell is reportedly looking for a buyer of its 45% stake in Majnoon, the country's third-largest oilfield. Its partners in the development are Petronas (30%) and state-owned Missan Oil Company (25%).

BGC, which runs the largest flare-reduction programme in the world, is a JV between South Gas Company (51%), Shell (44%) and Mitsubishi (5%).

Kazakhstan and China; Kazakhs are Going to Export Gas to this Giant Energy Consumer

ASTANA – Kazakhstan has signed a trade agreement with China covering exports of 5 billion cubic meters of natural gas to the Asian giant for a year, a deal that is expected to generate \$1 billion in earnings for the Central Asian country, JSC KazTransGas said on Tuesday.

"The contract was signed by JSC KazTransGas and PetroChina International Company Limited on September 30 in Beijing. Gas export deliveries are scheduled to begin on October 15," the Kazakh Company's press service said in a statement.

"Expected export earnings will be around \$1 billion," JSC KazTransGas said.

The natural gas will come from fields in western Kazakhstan, as well as reserves at JSC KazMunayGas's underground storage facilities.

China will take delivery of the gas via the Khorgos border point, the most important trade frontier between the countries.

"The diversification of transit and export routes for gas transportation in Kazakhstan, as well as the increase in the volume of natural gas exports, is important strategic objectives for the country," JSC KazMunayGas vice president of transportation and gas trading Kairat Sharipbayev said.

Exports of Kazakh gas to China are aimed at promoting beneficial bilateral relations focused on creating a common infrastructure and establishing trade and transport links in the Eurasian region, the statement said.

The agreement also calls for bolstering bilateral strategic energy relations, as indicated by the production of 25 percent of Kazakh oil by Chinese companies.

Azerbaijan Announced its Plans on Large Drilling Rig

Caspian Drilling Company (CDC), which is the operator of Azerbaijan's 'Dede Gorgud' floating semi-submersible drilling rig plans to use it for one of its projects in the Caspian Sea, a source in the country's oil and gas market told Trend.

"Currently, 'Dede Gorgud' rig is in a warm stacked mode. The company plans to use it for further drilling work in the Caspian Sea," said the source.

However, the source didn't specify for which company and at which field the drilling rig will be used.

Earlier, 'Dede Gorgud' rig was used for drilling work at Azeri-Chirag-Gunashli block of oil fields under the contract with BP.

In a warm stacked mode, rigs preserve their operability and can be put into operation immediately after signing a contract for using.

The 'Dede Gorgud' floating semi-submersible drilling rig, built in 1980, can work at a depth up to 500 meters, while the depth of drilling operations reaches 6,100 meters.

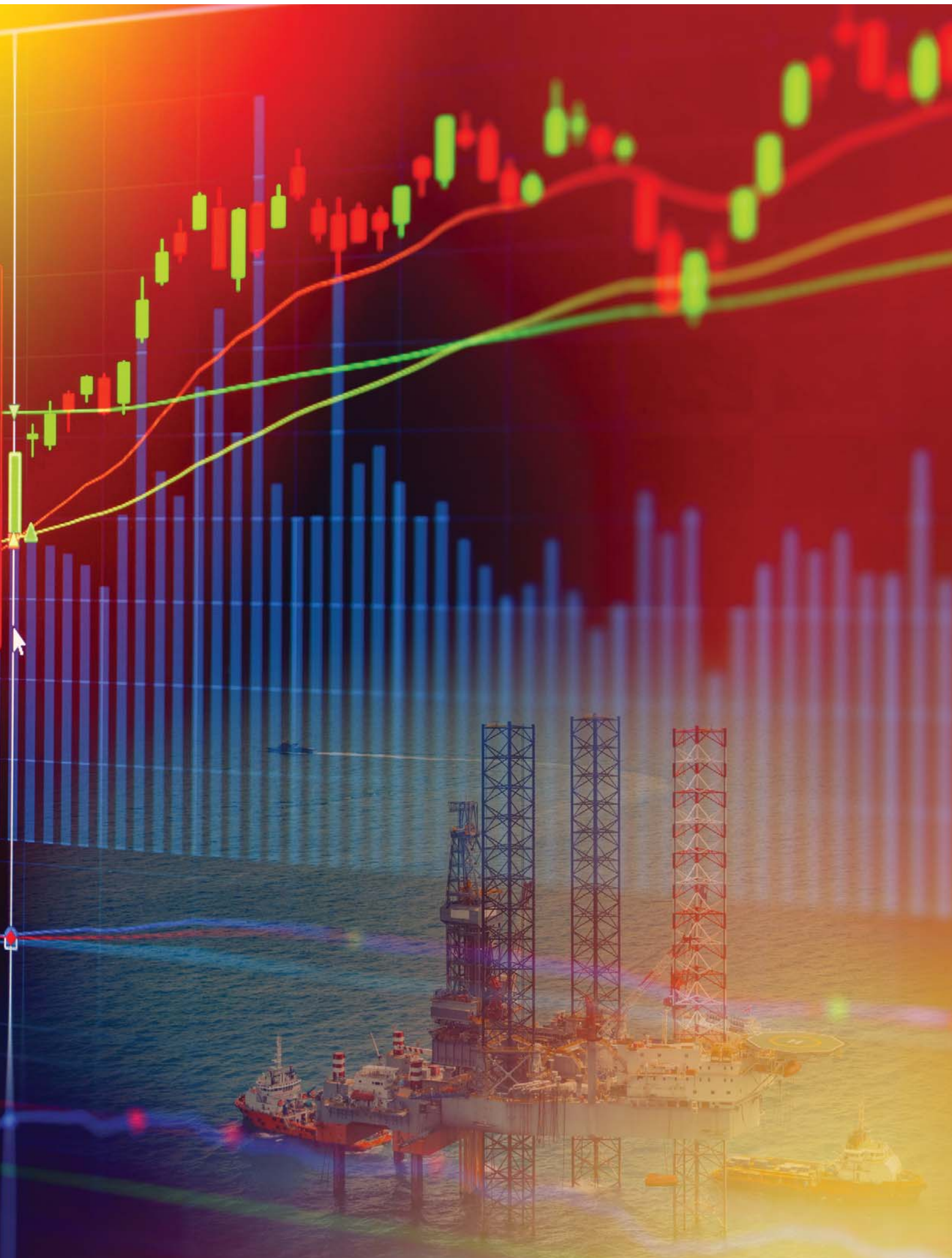
The Caspian Drilling Company (CDC, 92.44 percent of which is owned by Azerbaijan's state oil company SOCAR) is the operator of the 'Dede Gorgud' drilling rig.

Info&Trend

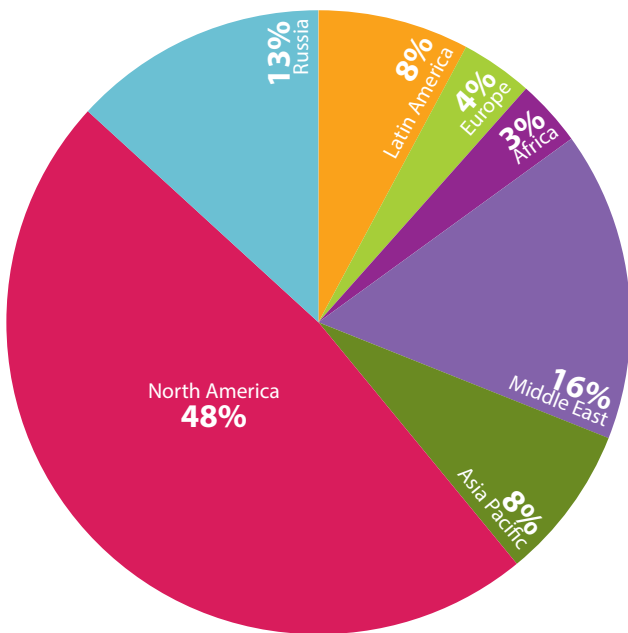
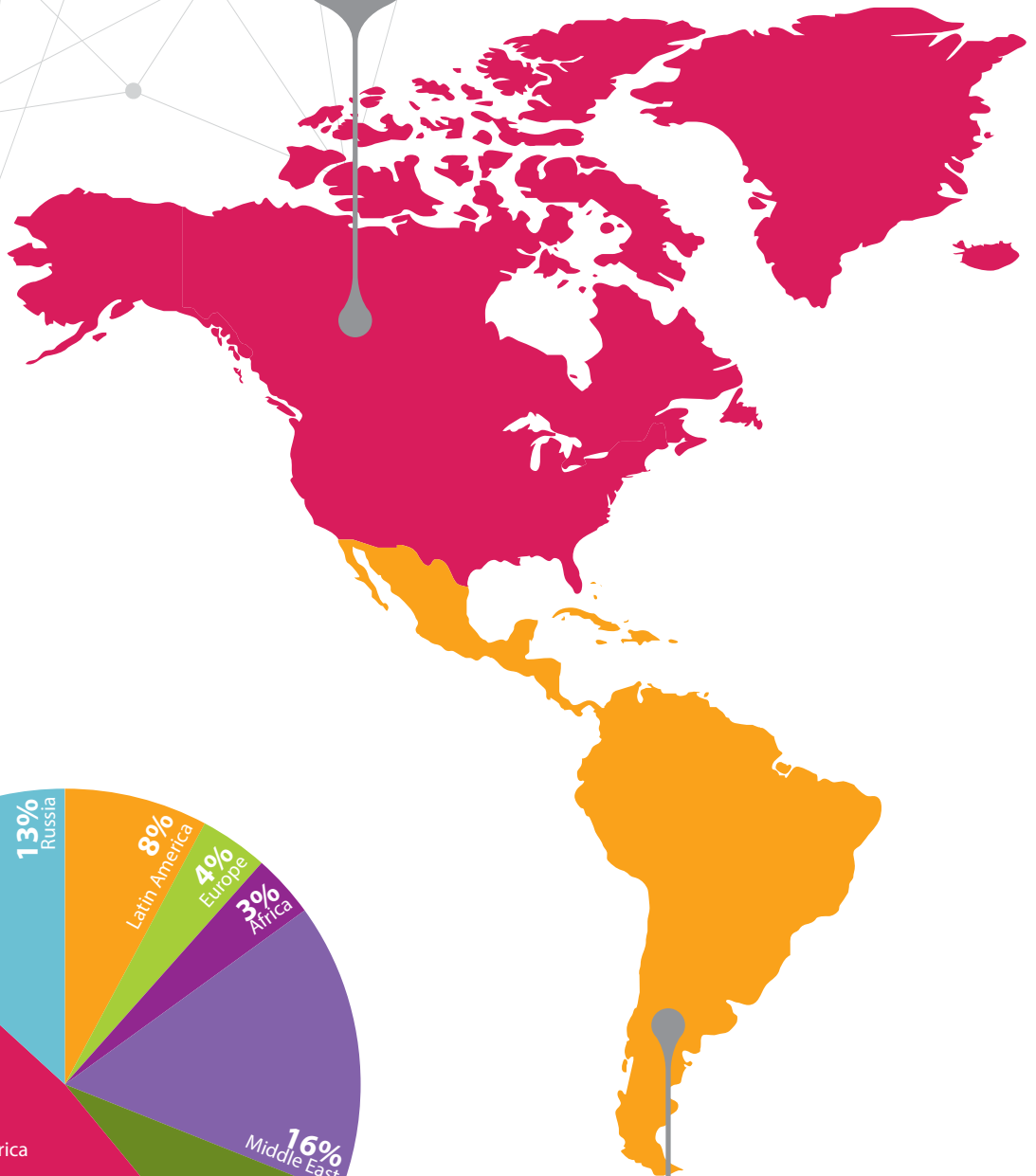
Greatest Gas Fields of the Region

According to the statistics, the Middle Eastern countries as well as those located in the northern Caspian Sea have a huge amount of reserves and a major portion of production and export of crude oil and natural gas in the world. In fact, this geopolitical area has encompassed an enormous part of the energy basket of countries worldwide; furthermore, if this region faces the challenge of supplying this energy, a huge part of the world's energy consumption will surely encounter serious problems and challenges. In the previous volume of Drilling Magazine, we published the largest oil fields in the region and information on the amount of reserves, daily production of crude oil, and sales and export of each country. By considering the importance of natural gas and its share in the energy basket of these countries and the cleanliness of this energy source compared with oil that has led the world's countries to have a growing desire to use it, we explore the largest gas fields in the region (in terms of the amount of natural gas stored locally) in this Info&Trend Chapter of this issue of the magazine. In this regard, information and topics in the form of infographics have been examined which appear to be the most important points while investigating the gas fields. These points include the amount of gas reserves, the amount of production in each of these gas reserves, the date of exploration, and the date at which they began to produce. It should be noted that in the countries of the region, attempts have been made to examine the trend of production and consumption of natural gas in each country in the last ten years and the amount of its natural gas reserves in the last twenty years in chart format.

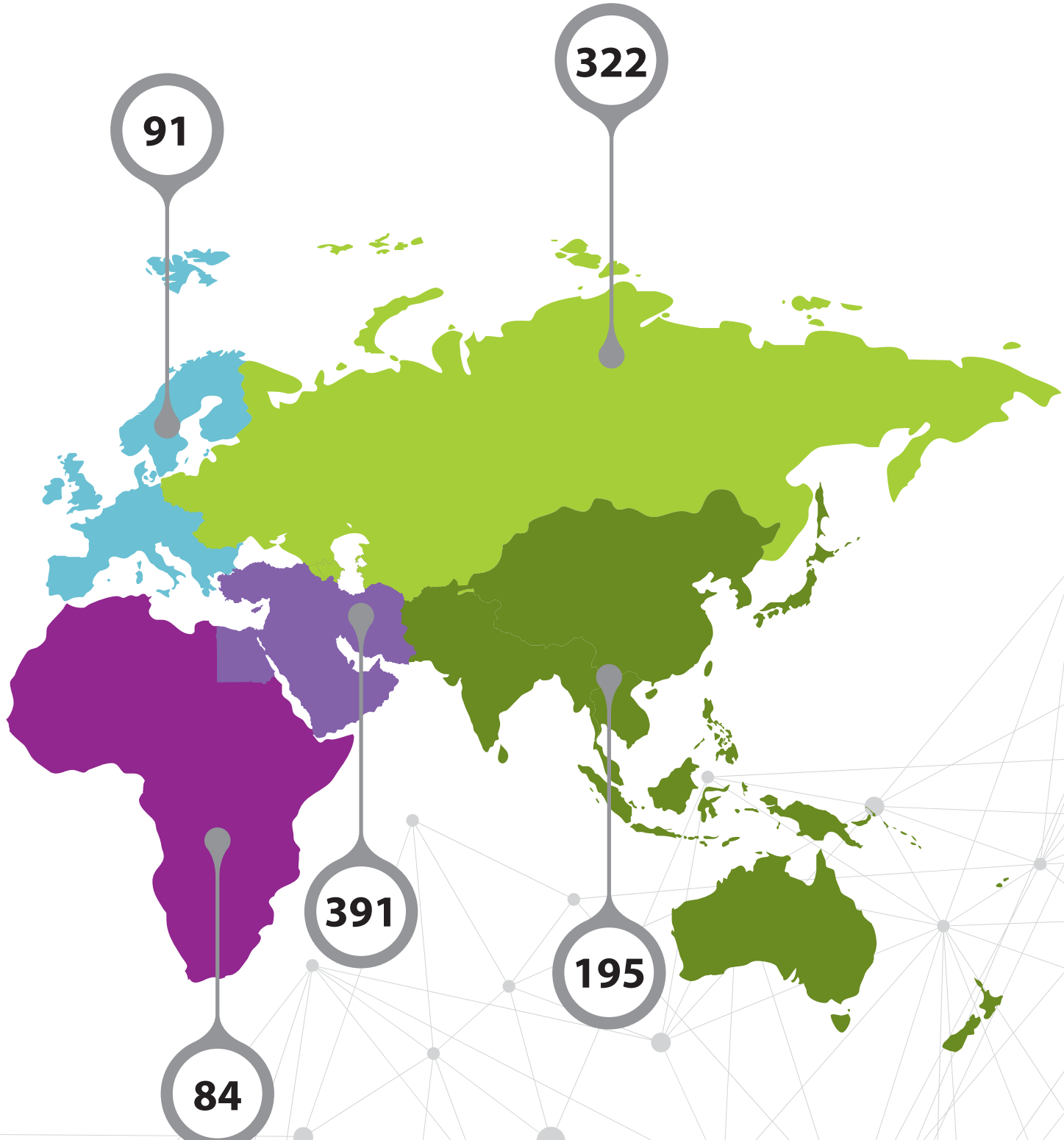




Global Rig Count by Regions



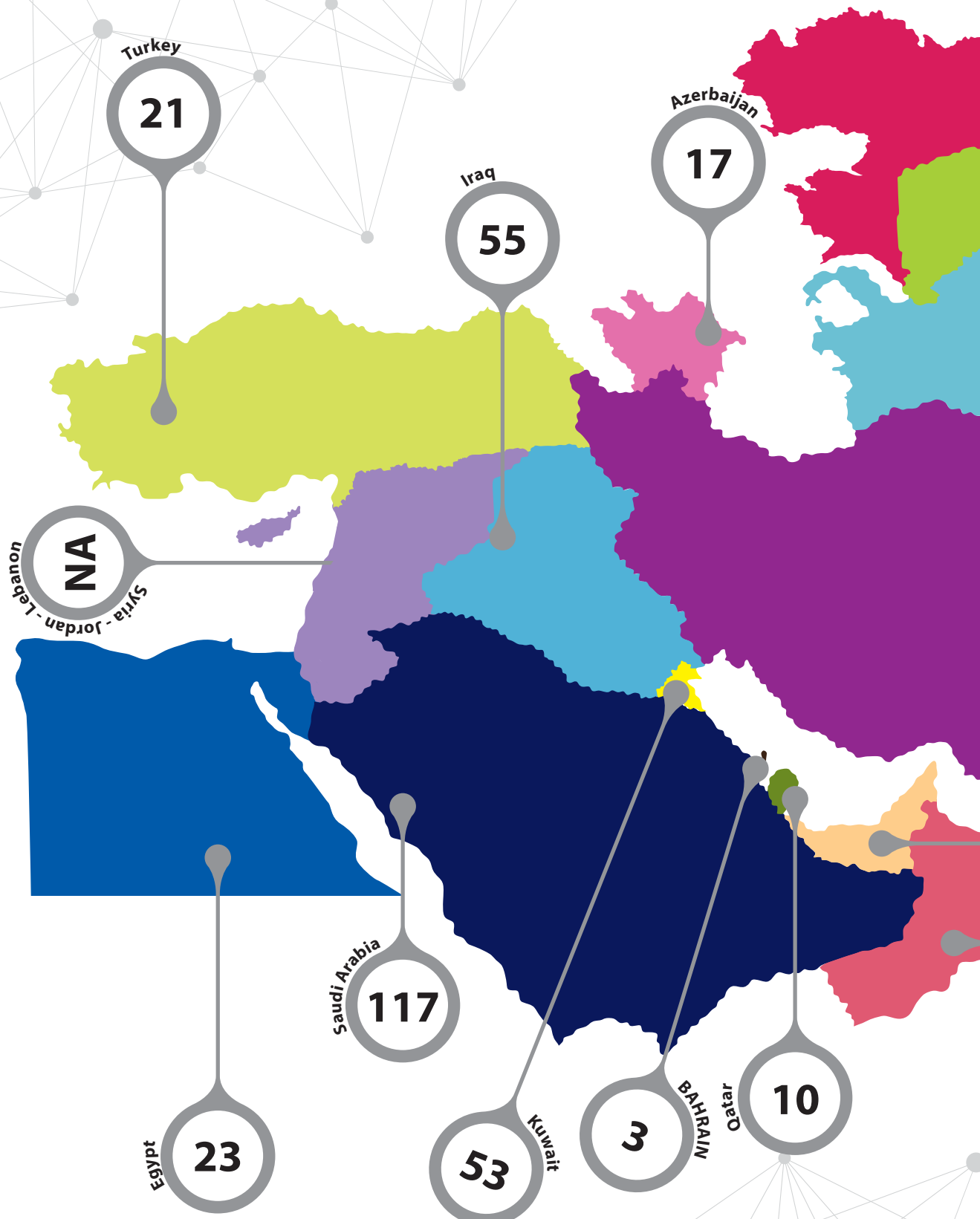
Active Rig Share by Region

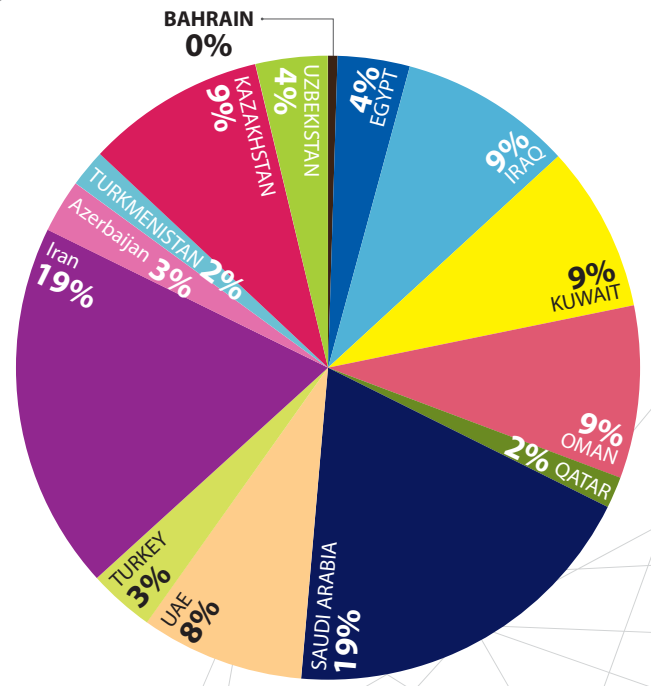
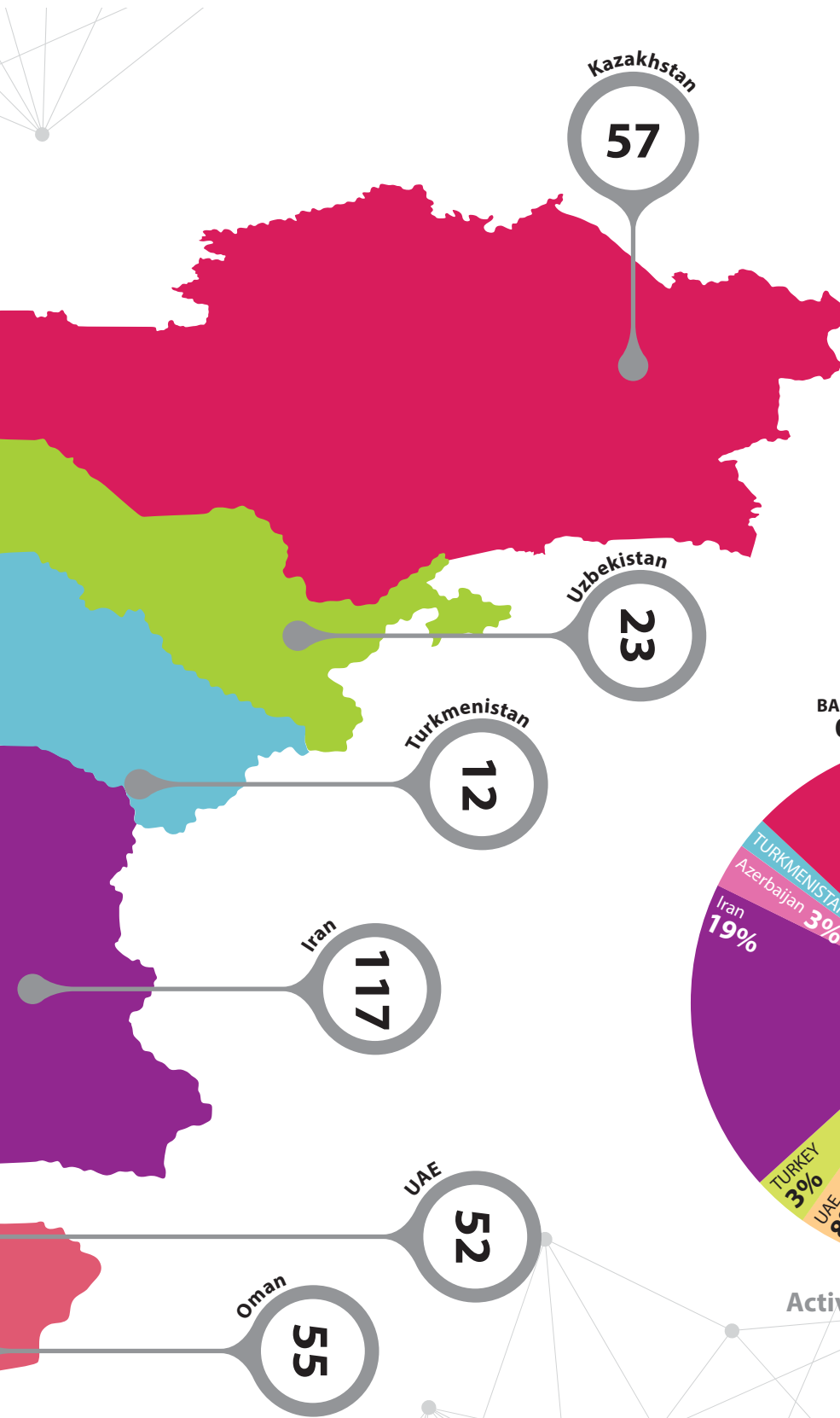


Sources:

- Baker Hughes Rig Count Sep. 2017
- OPEC Annual Statistical Bulletin 2017
- PUD Info.

Regional Rig Count By Countries





Active Rig Share by Country

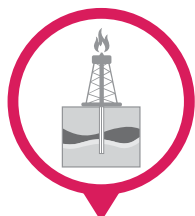
Sources:

- Baker Hughes Rig Count Sep. 2017
- OPEC Annual Statistical Bulletin 2017
- PUD Info.

Greatest Gas Fields of the Region

South Pars/North Dome (Joint Field)

Iran/Qatar



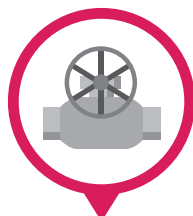
Reserve (tcf)

1800



Production (bcf/d)

40.3



Start of Production

1989



Discovery

1971

Gasfield Type

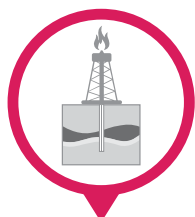
Offshore

Owner

NIOC-Qatar Petroleum

Galkynysh (South Yolotan)

Turkmenistan



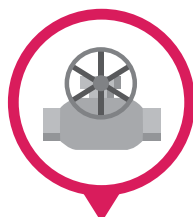
Reserve (tcf)

925



Production (bcf/d)

NA



Start of Production

2013



Discovery

2006

Gasfield Type

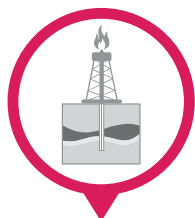
Onshore

Owner

Türkmengaz

Khazzan-Makarem

Oman



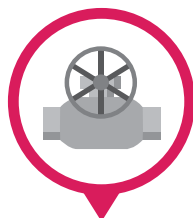
Reserve (tcf)

100



Production (bcf/d)

1
(estimated)



Start of Production

2017
(estimated)



Discovery

2000

Gasfield Type

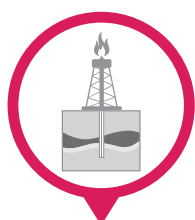
Onshore

Owner

-

North Pars

Iran



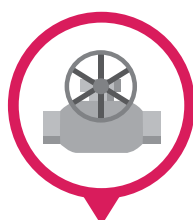
Reserve (tcf)

59



Production (bcf/d)

-



Start of Production

-



Discovery

1967

Gasfield Type

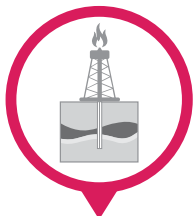
Offshore

Owner

NIOC

Kish

Iran



Reserve (tcf)

55.5



Production (bcf/d)

1.00



Start of Production

2005



Discovery

1968

Gasfield Type

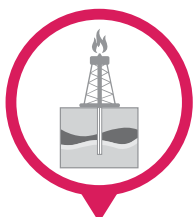
Offshore

Owner

NIOC

Golshan

Iran



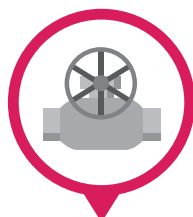
Reserve (tcf)

55



Production (bcf/d)

-



Start of Production

-



Discovery

1993

Gasfield Type

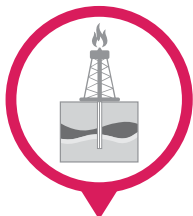
Offshore

Owner

NIOC

Dauletabad

Turkmenistan



Reserve (tcf)

50



Production (bcf/d)

-



Start of Production

1982



Discovery

1974

Gasfield Type

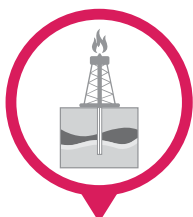
Onshore

Owner

Türkmengaz

Karachaganak

Kazakhstan



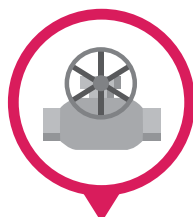
Reserve (tcf)

48.4



Production (bcf/d)

-



Start of Production

1984



Discovery

1979

Gasfield Type

Onshore

Owner

KazMunayGas (KMG)

Shah Deniz

Azerbaijan



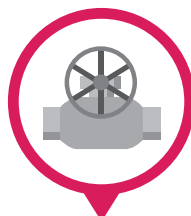
Reserve (tcf)

42



Production (bcf/d)

2.51



Start of Production

2006



Discovery

1999

Gasfield Type

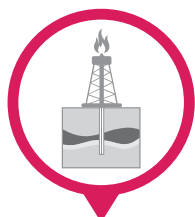
Offshore

Owner

SOCAR

Shatlyk

Turkmenistan



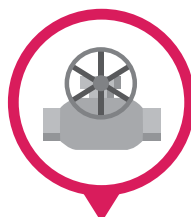
Reserve (tcf)

33



Production (bcf/d)

0.30



Start of Production

1980



Discovery

1974

Gasfield Type

Onshore

Owner

Türkmengaz

Tabnak

Iran



Reserve (tcf)

30



Production (bcf/d)

1.41



Start of Production

1980



Discovery

1967

Gasfield Type

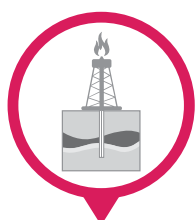
Onshore

Owner

NIOC

Zohr

Egypt



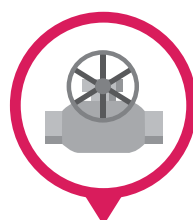
Reserve (tcf)

30



Production (bcf/d)

-



Start of Production

-



Discovery

2015

Gasfield Type

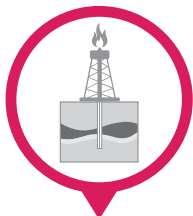
Offshore

Owner

EGPC

Aghar

Iran



Reserve (tcf)

25.79



Production (bcf/d)

0.78



Start of Production

1998



Discovery

1972

Gasfield Type

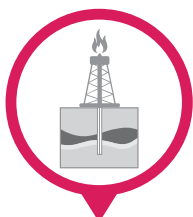
Onshore

Owner

NIOC

Farzad B

Iran



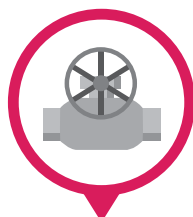
Reserve (tcf)

21.7



Production (bcf/d)

1.10



Start of Production

2013



Discovery

2012

Gasfield Type

Offshore

Owner

NIOC

Kangan

Iran



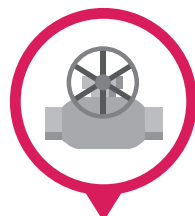
Reserve (tcf)

20



Production (bcf/d)

1.84



Start of Production

1995



Discovery

1972

Gasfield Type

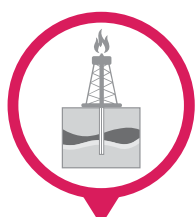
Onshore

Owner

NIOC

Absheron

Azerbaijan



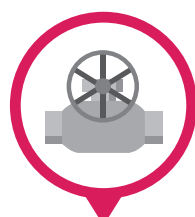
Reserve (tcf)

12.36



Production (bcf/d)

0.48



Start of Production

-



Discovery

2011

Gasfield Type

Offshore

Owner

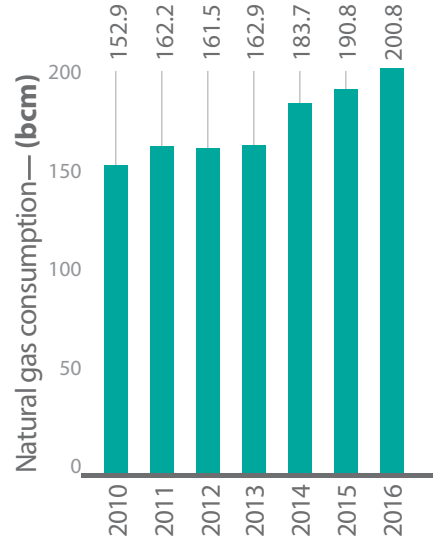
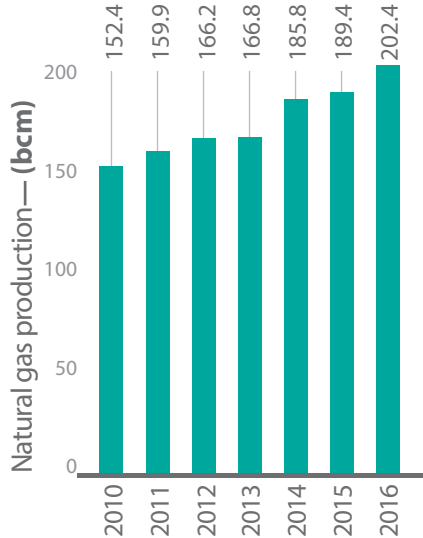
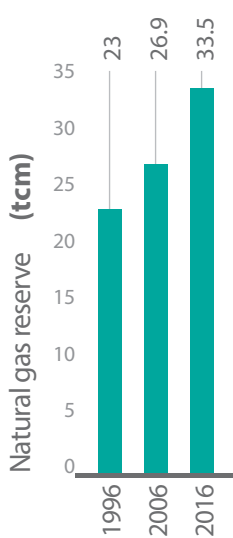
SOCAR

Natural Gas Statistics of the Regional Countries

IRAN



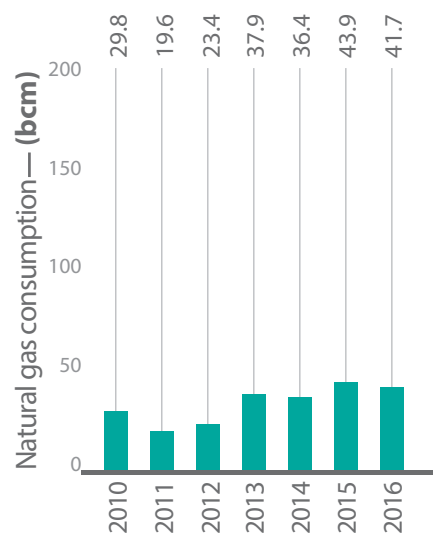
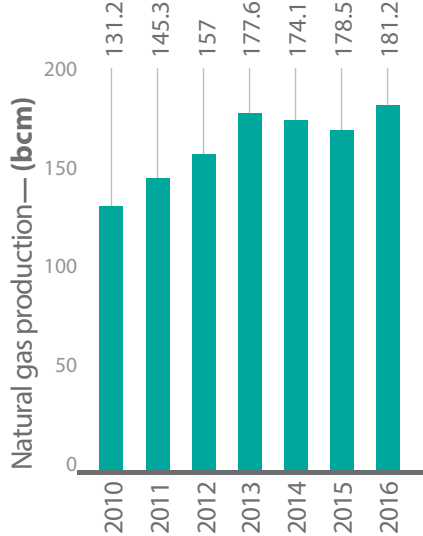
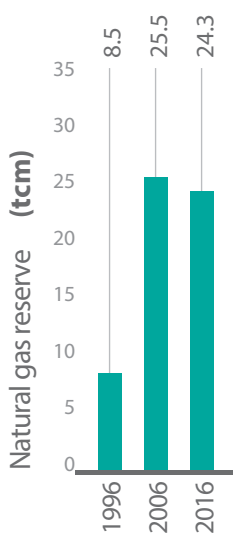
Iran produces 885 million m³ of gas daily—almost the same as Qatar—but most of it is being consumed domestically. Oil fields need gas injections to increase output, so much of what Iran is producing from its gas deposits is being used to stimulate oil production.



QATAR



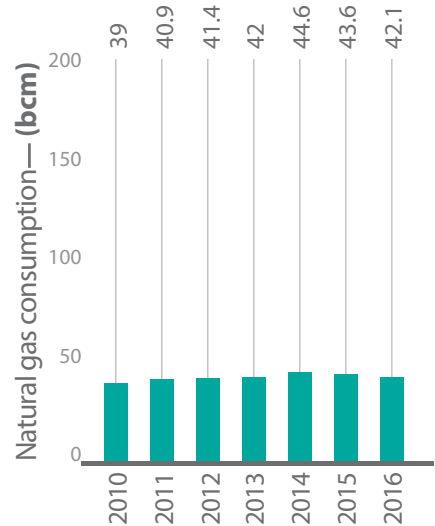
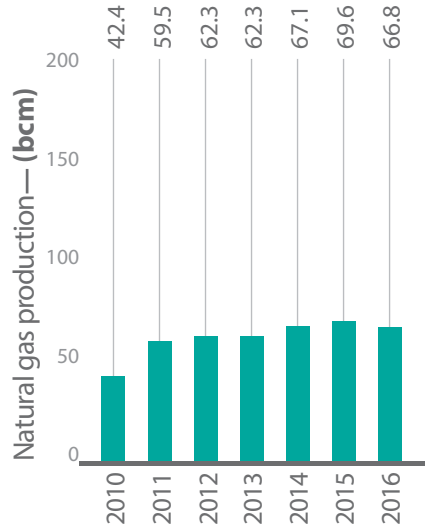
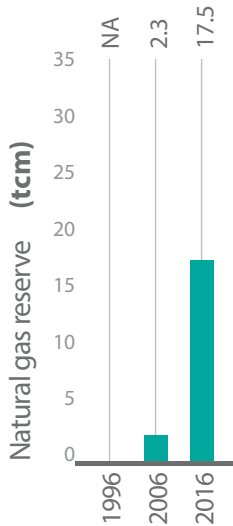
The natural gas in Qatar covers a large portion of the world supply of natural gas. Natural gas in Qatar was measured at approximately 25.4 trillion m³. The majority of Qatar's natural gas is located in the massive offshore North Field, which spans an area roughly equivalent to Qatar itself.



TURKMENISTAN



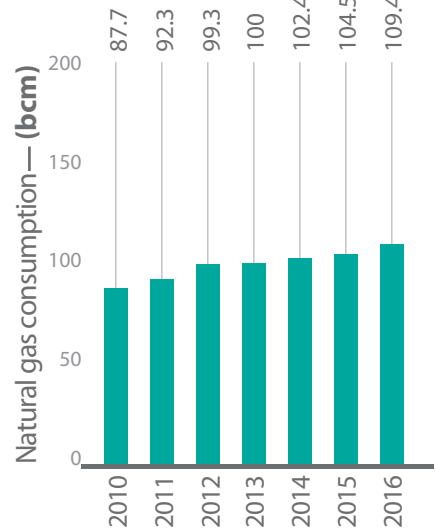
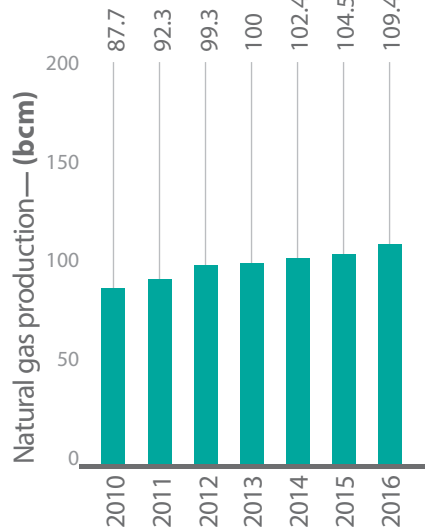
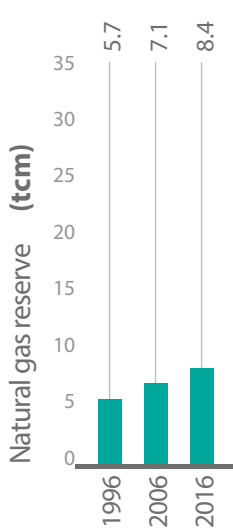
Turkmenistan is a country with a rapidly growing economy which has achieved exceptional results since gaining independence. The oil and gas industry is a key contributor to this economic success. Turkmenistan's resource base is approximately 71.64 billion tons of oil equivalent.



SAUDI ARABIA



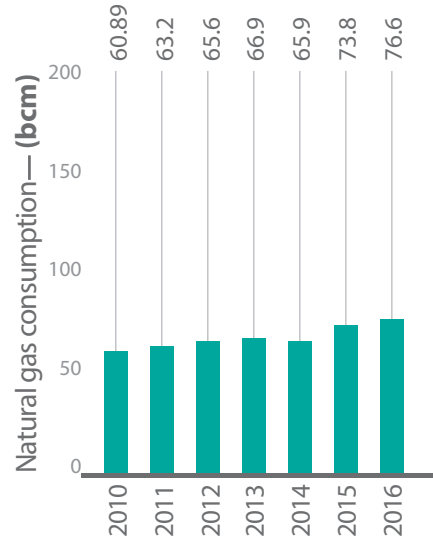
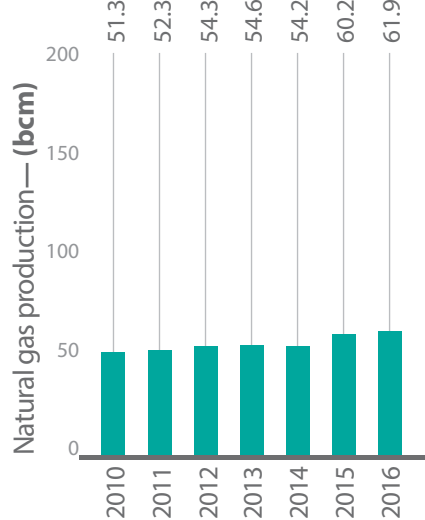
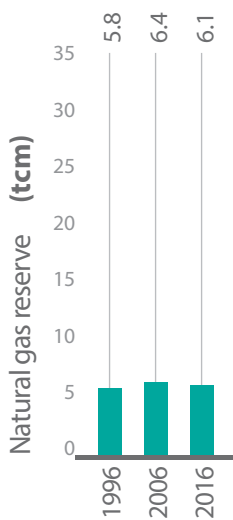
Saudi Arabia is a noteworthy country in terms of natural gas due to both their significant natural gas potential and current natural gas utilization. As of 2016, Saudi Arabia's total proved natural gas reserves were 8488.9 bmc3, which gave them the sixth most proved natural gas reserves globally



UAE



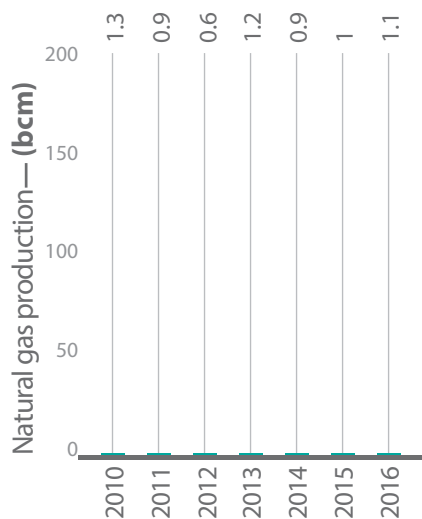
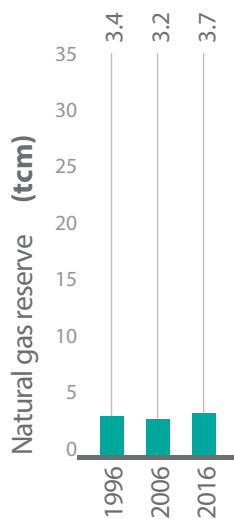
UAE is the world's sixth largest oil producer and the second largest producer of petroleum and other liquids in the Organization of the Petroleum Exporting Countries (OPEC). The U.A.E's hydrocarbon export revenues rose by nearly 65% between 2010 and 2015 from \$75 billion to \$123 billion, according to the IMF.



IRAQ



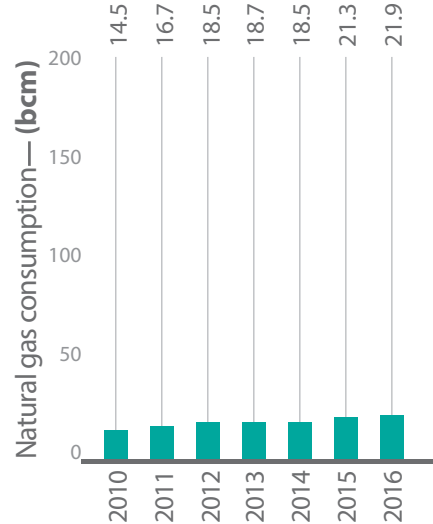
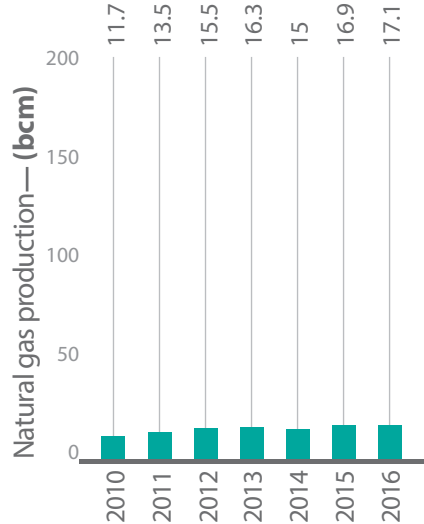
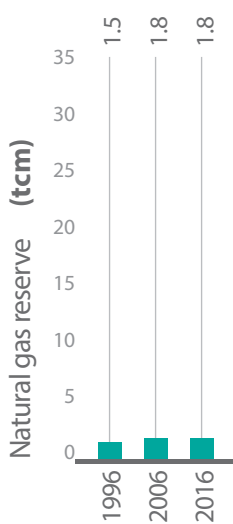
Iraq holds 18% of proved crude oil reserves in the Middle East and almost 9% of total global reserves. Most of Iraq's major known oil fields are producing or in development, although much of its known hydrocarbon resources have not been fully exploited.



KUWAIT



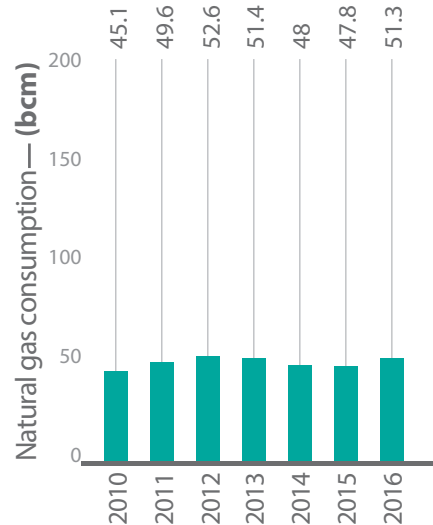
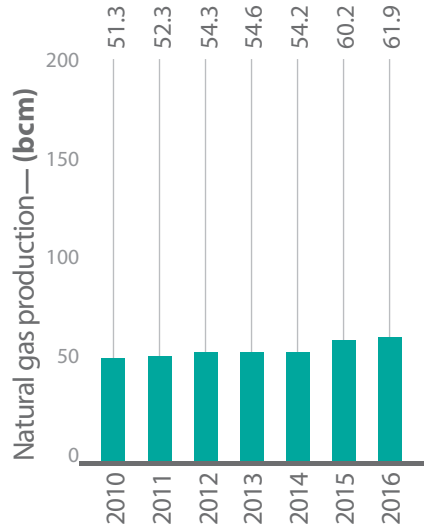
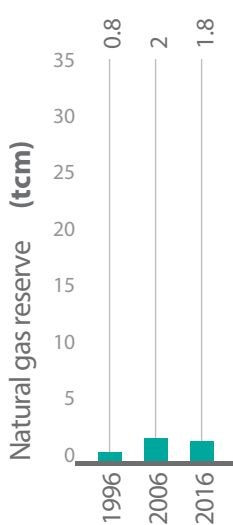
Although Kuwait is within the world's top 20 countries in regards to proved natural gas reserves, their reserve is rather low relative to some of the other countries in ME. As of 2014, Kuwait had 1,784 bcm³ of natural gas, which made Kuwait the seventh largest holder of gas reserves in ME.



EGYPT



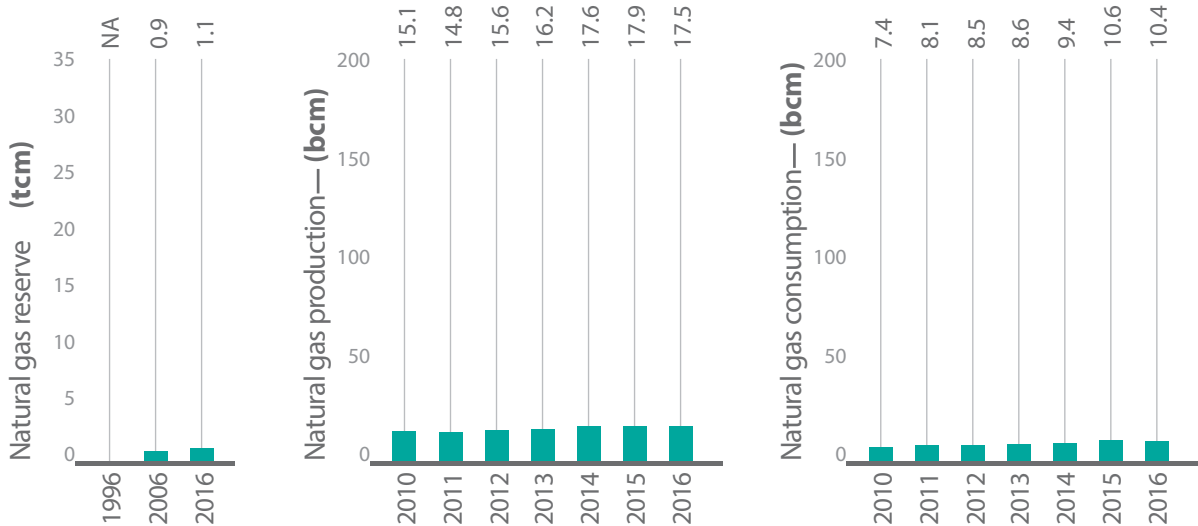
Egypt has the sixth largest proved oil reserves in Africa. Over half of these reserves are offshore reserves. Although Egypt is not a member of OPEC, it is a member of the Organization of Arab Petroleum Exporting Countries. Crude Oil Production in Egypt decreased to 485 bbl/d in June from 486 bbl/d in May of 2017.



AZERBAIJAN



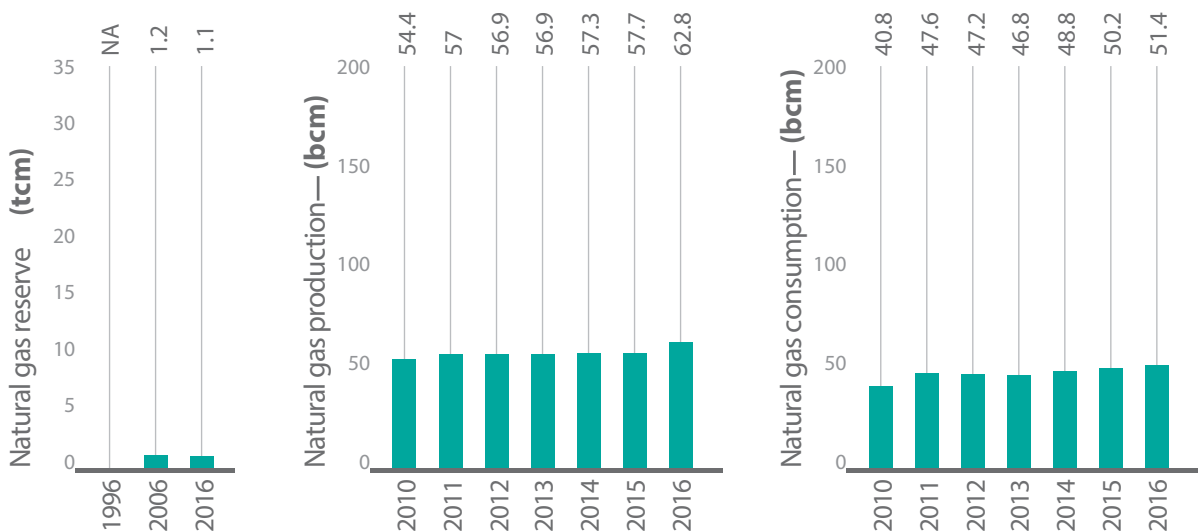
Azerbaijan, one of the most-progressing countries in oil and gas industry in the region, produced 29.33 billion cubic meters (bcm) of gas in 2016. The country began importing gas from Iran last year to cover a domestic shortfall.



UZBEKISTAN



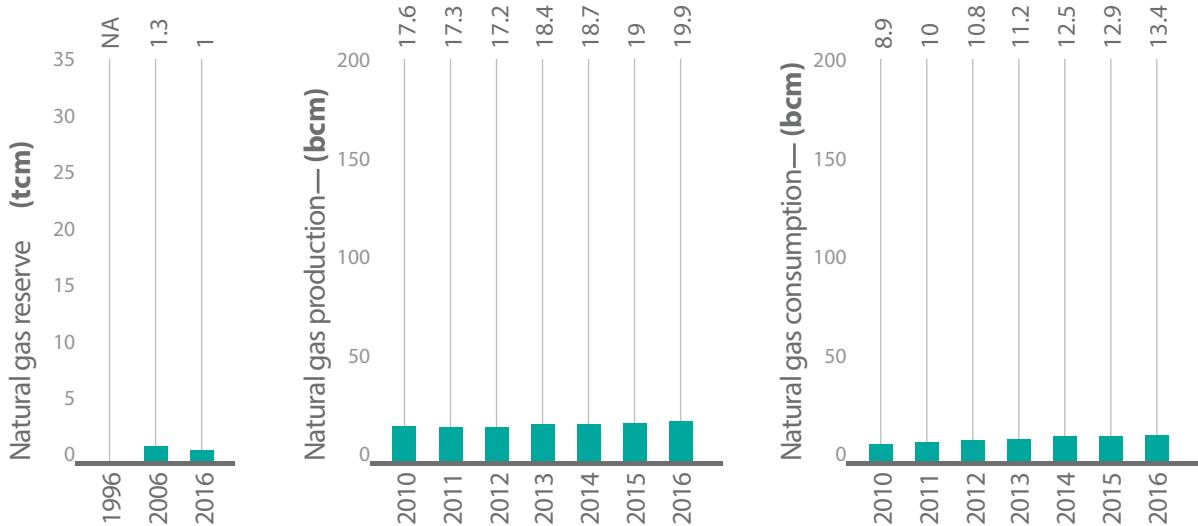
Modern oil and gas industry of Uzbekistan is one of the largest industries of economy, the most important energy base of the country. About 60% of the territory of the country is prospective for oil and gas. In five oil-and-gas-bearing regions of Uzbekistan, 211 deposits of hydrocarbon resources have been discovered.



KAZAKHSTAN



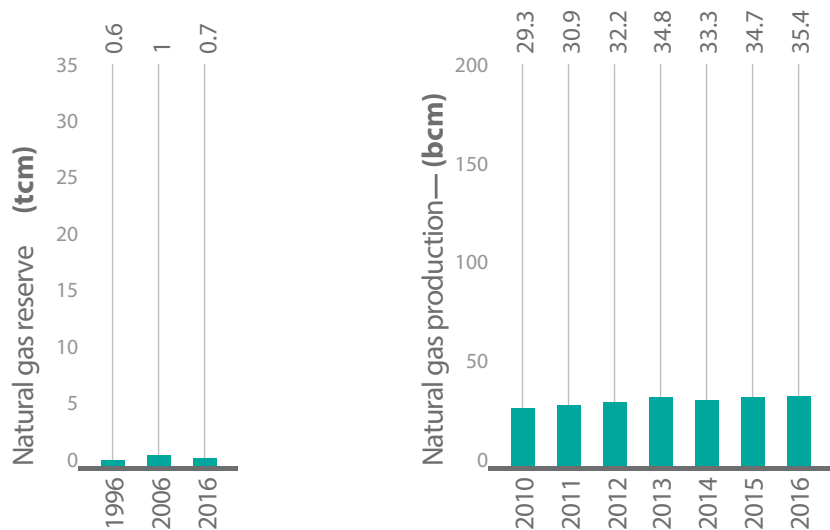
Oil & gas basins of Kazakhstan can be grouped into four revealed oil & gas provinces in Kazakhstan. Exploration in those provinces in which oil and gas has already been extracted, by 2010, led to the discovery of more than 200 oil, gas, oil-and-gas and condensate accumulations.



OMAN



Oman's petroleum and other liquids production averaged more than 1 million bbl/d in 2016. Oman was on track to maintain this production level in 2017, but it reduced production to approximately 970,000 barrels per day in early 2017 to meet the production cut it agreed to with OPEC countries.



Cover Story

Merger and Acquisition

Due to the conditions, trends, and production amount of crude oil in the recent years, few believe or even consider the possibility that in the near future the oil market would experience prices like those in 2011 and 2012. Under such conditions, the most logical approach is that adopted by large international oil companies: managing and reducing the costs, optimizing the investments, choosing the best and most justifiable options for investment, and many other issues that are always addressed in various papers. One of the methods employed in many industries, and not only in the oil and gas industry, to reduce the costs and increase the range of activities and the power to bargain is Merger and Acquisition. In the oil industry, with regard to the oil prices and the trends mentioned above, this method has been most welcomed by international companies, and many companies have recently merged with other companies or have bought smaller companies to increase their power in many ways. Regarding this topic and the importance of moving toward optimal solutions such as M&A for the developing countries, this volume of the magazine attempts to study Merger and Acquisition in a professional format and from different perspectives. The challenges faced by the human resources of companies when dealing with M&A, the cases performed in the USA, the legal issues about M&A in Iran, the economic conditions of companies that lead to solutions such as M&A, and the issues of organizational culture and the challenges and problems of integration and ownership in this field are among the topics discussed in this Cover Story chapter.





M&A; A Path to Improve

Reducing Costs or Increasing Revenue

Ramin Forouzandeh
Senior Strategist

Over the past decade, Merger and Acquisition has grown worldwide in the drilling industry. More than \$50 billion was spent by oilfield service providers during the last year for M&A processes. The process of developing M&A is noticeable especially in large and competitive markets (such as the United States and Canada). The minimal presence of the government in the oil sector of these countries provides the conditions for companies to move towards M&A for growth or survival in comparison with many Middle Eastern countries, faced with widespread and even monopoly of government.

According to Ernst & Young, more than 170 transactions were recorded in M&A transactions in 2016 that showed reduction in comparison to 2013. In terms of value, we have seen a record-breaking \$53 billion. That figure is almost \$20 billion higher than the previous record. Major part of M & A value in 2016 was due to two main transactions: the acquisition of Baker Hughes by the GE Oil and Gas Division, and the Merger of FMC with Technip.

M&A Strategic logic includes an unlimited set of options such as increasing the range of customers, increasing bargaining power, reducing costs, developing service provision, and vertical or horizontal Merger. Trade among the companies owning rigs usually occurs in order to increase the fleet, take advantage of the cost-effective scale and increase the range of customers. Such mergers have made a significant contribution to the growth of onshore drilling companies in North America. M&A has also been expanding in recent years in the offshore drilling sector. Issues such as the development of a service portfolio or the provision of new solutions may be on the agenda among the companies offering several drilling services. In recent years, some of the mega-mergers have been linked to this logic. Strategic logic can also be used to create a monopoly in the market, when market watchdogs confront with it.

In a general split, the M & A results in increase of productivity, which appears to be either a form of cost reduction or an increase in revenue. Reducing costs is usually more straightforward and less time-consuming, while increasing revenue will be more difficult and more time-consuming. Companies usually focus on lowering costs in a short time. For example, the tangible results of the transaction are announced as lower costs when the results of M&A are report-

ed to shareholders, as it is more certain and shareholders can see the results as soon as possible. On the opposite side, the revenue-generating effects of the merger are practically related to several factors, such as transaction success or market conditions, and in many cases may not have any effects at all.

Moving towards M&A in the last decade, especially in the recent years can be attributed to several factors. One of these factors is either the direct or indirect demand of the market to reduce costs, especially when the prices are low. The source of revenue for drilling service providers is the cost to oil companies (exploration and production actors). Therefore, the cost reduction as a result of the reduction in oil prices is also transferred to service providers. They may need solutions to stay in the market and support their demands. This is the way that speeds up the shift to M&A.

Another important factor is the company situation. As the market shrinks, the more inefficient actors are eliminated. If the M&A does not happen, not only the brand, but also the assets of a company will face decrease in market value. Important losers are corporate shareholders who may go bankrupt. Debtors also face the perspective that they may never receive a small fraction of their claims,

even though they have a priority over the shareholders to receive their claims. As a result, the total stakeholders conclude that the M&A could be the best option, even if it is valued far below the peak times.

With any logic to examine the result and the reason for M&A, it is clear that the produced synergy will usually be one of the factors of the company's long-term growth and the improvement of the industry. In the drilling industry, such a process is common among the onshore and offshore rig owners, providers of various drilling services, equipment manufacturers, and other industry players. However, M&A decisions cannot guarantee a successful move by itself. It is necessary to investigate a series of studies on market conditions, the strategic logic of M&A, financial results and requirements, legal dimensions, organizational characteristics, and maturity of the two organizations before a M&A decision. M&A may encounter problems at the implementation stage, which cannot success or lead to failure even with the assumption of strategic logic and appropriate estimation. Therefore, there is usually a team of people to do this whose members are not limited to managers of the two organizations and include a set of institutions and experts in the field of finance, law, auditing and engineering.

with any logic to examine the result and the reason for M&A, it is clear that the produced synergy will usually be one of the factors of the company's long-term growth

M&A in the Oil Industry

In Theory and Practice

Reza Pakdaman
Energy Lawyer

Transformation of the structure of the companies occurs more often these days due to accelerated growth of global business and rapid changes of the market conditions. One of the most recent methods to succeed with new business polices is merger & acquisition. This paper will have an overall look at this growing phenomenon.

A Good Definition for M&A

Different definitions have been proposed for merger & acquisition.

Merger may be defined as “the union of two or more independent corporations under a single ownership. Also known as takeovers, mergers may be friendly or hostile. In the latter case, the buying company, having met with resistance from directors of the targeted company, usually offers an inflated (over market) price to persuade stockholders of the targeted company to sell their shares. Such mergers often are financed by junk bonds.”

The term “acquisition” is used to describe a wide variety of transactions in a business context. The most common forms are the sale and purchase of a business (or asset sale) and the sale and purchase of all of the shares in a private company (share sale). A merger occurs where the combination of two companies results in effectively no transfer of control, and the two groups of shareholders are in a position to continue their shareholdings as before but on a combined basis.

Types of Mergers

Different types of merger have been practiced; the most common are as follows:

- a) Conglomerate merger, (between totally unrelated business activities)
- b) Horizontal merger, (between companies in the same industry often as competitors)
- c) Market extension merger, (between two companies that deal in the same products but in separate markets)
- d) Vertical merger (between two companies producing

different goods or services for one specific final product.)

e) Product extension merger (between two business organizations that deal in products that are related to each other and operate in the same market.)

Types of Acquisition

An acquisition’s strategic rationale should be a specific articulation of one of these archetypes, not a vague concept like growth or strategic positioning, which may be important but must be translated into something more tangible. Furthermore, even if your acquisition is based on one of the archetypes below, it won’t create value if you overpay.

In relation to acquisitions, the seller (or vendor) of the

The term “acquisition” is used to describe a wide variety of transactions in a business context.

The most common forms are the sale and purchase of a business (or asset sale) and the sale and purchase of all of the shares in a private company

business may be an individual, partnership or company, and any sale to the buyer (or purchaser) may be structured as a disposal of the business as a going concern or a sale of certain assets of the business only. If the business is owned by a company, the shareholders of the company may decide to sell their shares to the buyer. If all of the shares in the company (known as the target company) are acquired by a company, the target becomes a wholly-owned subsidiary of the buyer.

A hive down is a compromise between a business sale and a share sale. This is the process whereby the target transfers a business or assets intra-group to a new company set up as its wholly-owned subsidiary. The shares in the subsidiary are then acquired by the buyer.

A business combination can be effected as either an asset acquisition or a stock acquisition.

a) Asset acquisition

The acquirer buys some or all of the target’s assets/liabilities directly from the seller. If all assets are acquired, the target is liquidated.

b) Stock acquisition

The acquirer buys the target’s stock from the selling shareholders.

Practices

Collapse of oil price forced many companies active in oil industry, either E&P or service provider, to revise their strategy.

The main M&As in Oil Industry in recent years are as follows:

2012 – Schlumberger / Anton Oilfield Services
 2012 – CGG / Fugro
 2013 – Cameron / Schlumberger
 2013 – CGC / Baker Hughes
 2013 – GE Oil & Gas / Lufkin Industry
 2013 – Trinidad Drilling / Halliburton
 2014 – GE Oil & Gas / SapuraKenkana
 2014 – Amec / Foster Wheeler
 2014 – Helix / OneSubsea / Schlumberger
 2014 – Aker Solutions / Baker Hughes
 2014 – Siemens / Dresser- Rand
 2014 – Saipem / Chiyoda / Xodus
 2014 – Halliburton / Baker Hughes (failed to close)
 2015 – GE Oil & Gas / McDermott
 2015 – Technip / FMC (Forsys Subsea)
 2015 – Petrofac / McDermott
 2015 – Subsea 7 / KBR
 2015 – EMAS / Chiyoda
 2015 – Schlumberger / Cameron
 2015 – Subsea 7 / One Subsea
 2015 – Aker Solutions/ Saipem
 2016 – Aker Solutions / ABB
 2016 – Technip / FMC
 2016 – GE Oil & Gas / NOV
 2016 – Patterson –UTI / Seventy Seven
 2016 – Aker Solutions / Det Norske
 2016 – GE Oil & Gas / Baker Hughes

ConocoPhillips, the largest U.S. independent oil producer, last year announced its willingness to sell up to \$8 billion in natural gas assets and trim its capital budget by 4 percent for the year 2017, to provide funds to bolster operations.

Last year, Denmark's A.P. Moller-Maersk and DONG Energy started in talks to merge their oil and gas operations in a deal that would create a business worth more than \$10 billion including debt, sources familiar with the matter said.

Technip and FMC Technologies, Inc. two market leaders, announced that the companies will combine to create a global leader that will drive change by redefining the production and transformation of oil and gas. The combined company, which will be called TechnipFMC, would have an equity value of \$13 billion based on pre-announcement share prices. (Reuters)

The strategic benefits of the combination were described as:

- a) Creates a leader in Subsea, Surface and Onshore/Offshore, driven by technology and innovation:
- b) Builds a comprehensive and flexible offering across each market from concept to project delivery and beyond

The financial benefits of this merger was expressed as:

- a) All-stock transaction expected to deliver at least \$400 million in annual pretax cost synergies
- b) Diversifies revenue mix and drives cash flow:
- c) One of the strongest balance sheets in the industry

In Sept. 2016, Det norske has completed the closing of the merger with BP Norge AS (BP Norge) and the subsequent establishment of Aker BP ASA (Aker BP), the leading independent offshore E&P company on the Norwegian Continental Shelf. The company is on track with the integration process and reiterates the ambition of a quarterly dividend for the fourth quarter of 2016.

"Aker BP has an ambition to grow through M&A and organic portfolio development. In addition, there is significant potential for cost savings by approaching new ways of thinking. Aker BP will leverage on a lean and nimble business model, state-of-the-art technological capabilities, and industrial collaborations. We are on track with identifying opportunities across the newly combined entity, and are building a strong and cost effective fit-for-purpose Aker BP," says Hersvik, Chief Executive Officer of Aker BP.

Energy companies are scrambling to lock in offshore rigs to drill in the current high-price environment.

In 2015, Schlumberger Limited announced an agreement to acquire a minority equity interest in Eurasia Drilling Company Limited ("EDC"). The agreement extends the successful long-term relationship enjoyed by the two companies within the strategic alliance signed in 2011, which has enabled deployment of a range of drilling and well engineering services to customers in the Russia land





conventional drilling market.

EDC is the largest provider of onshore drilling services in Russia, as measured by the number of meters drilled, providing onshore integrated well construction services and work-over services. The company also provides offshore drilling services in the Caspian Sea and is the largest provider of such services in the sectors where it operates based on the number of jack-up drilling rigs.

In Sep. 2017, Key Energy Services Inc. (NYSE: KEG) has closed on the sale of its well intervention business in Russia to an undisclosed buyer for an undisclosed amount. Key's president and CEO, Robert Drummond, stated, "The sale of Key's Russian Business marks the culmination of the strategic initiative set forth in early 2015 to fully-exit markets outside of the US." Key Energy Services is the largest onshore, rig-based well servicing contractor based on the number of rigs owned. Key provides a complete range of well intervention services and has operations in all major onshore oil and gas producing regions of the continental United States

Not much M&A has occurred in the Middle East. Although a number of mergers has occurred mainly under the law, regarding the state controlled companies, few of them were in the oil industry.

Regarding the acquisition, general rules are set under the national legal systems. In the oil industry, acquisition of the assets mostly occurs in midstream and downstream, and rarely in upstream. The main reason for this approach is the legal nature of the upstream sector in the oil & gas producing countries that is controlled by the state companies such as ARAMCO, NIOC, etc.

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M&A a Strategic Decision

Merger & acquisition is a strategic decision that a company may take. Objectives for such action in the oil industry may be categorized as follows:

- a) Economic factor; due to low oil prices and lack of works for some companies.
- b) Efficiency factor; to increase efficiency by selling out certain parts of the assets.
- c) Business policy; changing the business sector to concentrate on the core business.
- d) Political factor; due to political pressures on companies to leave certain markets.

To fulfill any of these goals, two paths should be taken:

- a) Merger of the companies with similar business activities.
- b) Privatization of public and state companies and/or their assets and acquisition of the assets

On the other hand, national policies & rules pertaining the oil & gas industry has much effects on the behavior of the countries. For example, the national policies requiring the increase of oil & gas production, which is the most common stands of oil exporting countries at present time, will encourage private investment and attraction of foreign investment in all oil and gas industry chains and handing over the job to the more competent companies .

To fulfill such policy, many state & public companies should be merged and some assets of national oil companies and their affiliates should be offered to foreign & domestic private entities for acquisition.

Value Creation and Capture from M&A in Upstream

Do oil and gas acquisitions create value in upstream sector?

Mohammadmahdi Mozaffar
E&P Consultant

Do oil and gas acquisitions create value in upstream sector? A fundamental question, but difficult to answer, and largely overlooked as a result. M&As, by which two companies are combined to achieve certain strategic and business objectives, are transactions of great significance, not only to the companies themselves but also to many other constituencies, such as workers, managers, competitors, communities and the economy. Their success or failure has enormous consequences for shareholders and lenders as well as the above constituencies. Upstream Companies invest billions of dollars in making acquisitions. Do these M&As add or destroy shareholder value? Shareholder wealth gains are usually measured by abnormal returns, i.e. returns in excess of an appropriate benchmark return.

The terms 'merger', 'acquisition', 'buyout' and 'takeover' are all part of the mergers and acquisitions parlance. Generally M&A contains 5 key stages you can find as below:

- Corporate strategy development;
- Organizing for acquisitions;
- Deal structuring and negotiation;
- Post-acquisition integration;
- Post-acquisition audit and organizational learning.

M & A is a mean to an end and is an instrument for achieving the objectives of corporate and business strategies. Business strategy is concerned with ways of achieving, maintaining or enhancing competitive advantage in product markets. Corporate strategy is concerned with ways of optimizing the portfolios of businesses that a firm currently owns and with how this portfolio can be changed to serve the interests of the corporation's stakeholders. M&A can serve the objectives of both corporate and business strategies but is only one of several instruments. Effectiveness of M&A in achieving these objectives depends on the conceptual and empirical validity of the models upon which corporate strategy is based.

One of the major reasons for the observed failure of many acquisitions may be that firms lack the organizational re-

sources and capabilities for making acquisitions. It is also likely that the acquisition decision-making processes within firms are far from the models of economic rationality that one may assume. Thus a pre-condition for a successful acquisition is that the firm organizes itself for effective acquisition making. An understanding of the acquisition decision process is important, since it has a bearing on the quality of the acquisition decision and its value creation logic. Success of post-acquisition integration is determined

at least partly by the thoroughness, clarity and forethought with which the value creation logic is blueprinted at the acquisition decision stage. Under certain circumstances, the deficiency of the decision process can diminish the chance of a successful acquisition. Pitfalls in deal structuring and negotiation consists of:

- Valuing target companies, taking into account how the acquirer plans to leverage its own assets with those of the target;
 - Choice of advisers to the deal such as investment bankers, lawyers, accountants, and environmental consultants;
 - Obtaining and evaluating as much intelligence as possible about the target from the target as well as from other sources;
 - Performing due diligence;
 - Determining the range of negotiation parameters including the 'walk-away' price negotiating warranties and indemnities;
 - Negotiating the positions of senior management of both firms in the post-merger dispensation;
 - Developing the appropriate bid and defense strategies and tactics within the parameters set by the relevant regulatory regime, etc.
- In order to be useful in valuing and negotiating deals and in effectively integrating and managing the acquired businesses, due diligence needs to cover the following aspects of the target company are:
- Commercial, e.g. competitive position, customer relations, patents;
 - Operational, e.g. production technology, processes and systems;
 - Financial and tax, e.g. historical accounting information, potential tax liabilities;

Corporate strategy is concerned with ways of optimizing the portfolios of businesses that a firm currently owns and with how this portfolio can be changed to serve the interests of the corporation's stakeholders

- Legal, e.g. onerous contracts, product or environmental liabilities;
- Human resource, e.g. compensation, training, employee relations;
- Organizational, e.g. structure, management style, power distribution;
- Information systems, e.g. performance, cost, complexity, compatibility.

At Post-acquisition integration stage, the objective is to put in place a merged organization that can deliver the strategic and value expectations that drove the merger in the first place. Integration has the characteristics of a change management program but three types of change may be involved in here:

- Change of the target firm;
- Change of the acquiring firm; and
- Change in the attitude and behavior of both to accommodate co-existence or fusion of the two organizations.

Post-acquisition audit and organizational learning stage may often be neglected for several reasons:

- Lack of organizational emphasis on learning;
- Each deal considered so unique that past experience of mergers is deemed irrelevant;
- Lack of centralized and ongoing function that is responsible for archiving the past and diffusion of learning;
- Lessons learned not codified but resides in individuals' experience with those individuals being co-opted into deal-making teams when necessary;
- Individuals' past experience is not systematically communicated but spread haphazardly through anecdotes and folklore within the organization;
- 'The trail gone cold' – difficult to trace the acquired or merged firm since it is now part of a larger strategic busi-

ness unit or subsidiary so lessons cannot be learnt.

It's very natural that at the beginning of an upstream project, our ultimate goal is to complete it at defined cost, time, and quality, while we have done all the necessary predictions based on today's information; but with time and changing the parameters, sometimes we must make difficult decisions. In this regard, we always should have exit strategy throughout divestment or build strategic alliances. M&A is one of the most common approaches which upstream companies choose in these situations.

In current challenging business environment, which adds to the complexity and uncertainty of business conditions, companies need to grow to be competitive on the market, M&A remains a key growth strategy for companies. Here we focus on strategies which help upstream companies to create and capture value effectively through mergers and acquisitions for their shareholders. In fact, main aim is to find out if M&A have any effect on financial performance of participating and operation of companies. Here, to better understand the conditions and design a successful strategy, we need to focus on the characteristics of the upstream oil and gas industry. High risk against high rewards, long-term projects, high uncertainty, increasing complexity and high capitalization are some the features that make it impossible to formulate static strategic plan in highly dynamic environment. In the other word in this industry, we must always have the readiness to change the plans wisely, in an innovative and agile manner in the face of environmental conditions.

In the oil and gas sector, companies are using M&As to adapt to changing environments. The large and sudden fall in oil prices—driven by big increases in world supply and the battle between Persian Gulf producers and nimble



new North American shale and fracking companies—has caused a big change in the industry. Many exploration and production (E&P) companies in the oil and gas sector are undergoing portfolio management exercises – divesting non-core assets and reducing exploration and development budgets.

The collapse in oil price has begun to trigger consolidation in the oil & gas industry, with six large scale deals already executed. Given stalling cash flows, looming bankruptcies, shrinking CAPEX budgets and the tremendous war-chests raised by private equity, we expect to see a dynamic M&A environment that fosters creative deal-making—especially for independents and small to mid-sized entities. Getting value out of M&A at this point in the downturn will require not only a solid strategy, but also flawless planning and execution of integration.

Integration will be particularly challenging for deals in this industry, at this point in time, for a variety of reasons. Many entities have already taken headcount reductions—making “quick win” synergies less apparent. Also, the distributed nature of field operations makes it challenging to capture economies of scale from M&A that are typically seen in other industries. Despite these challenges, we believe there is still significant value that can be captured— particularly from looking beyond traditional synergies. The value at stake and approach to value capture varies across deal types, and deal-makers should consider lessons from all three:

1. Asset deals and roll-ups: Bolt-on asset acquisitions by majors, NOCs or independents; or roll ups of multiple assets into new entities
2. Majors or NOCs buying independents: Large-scale acquisition of independent players
3. Merger of equals: Merger between similar-sized independents or independent and NOC

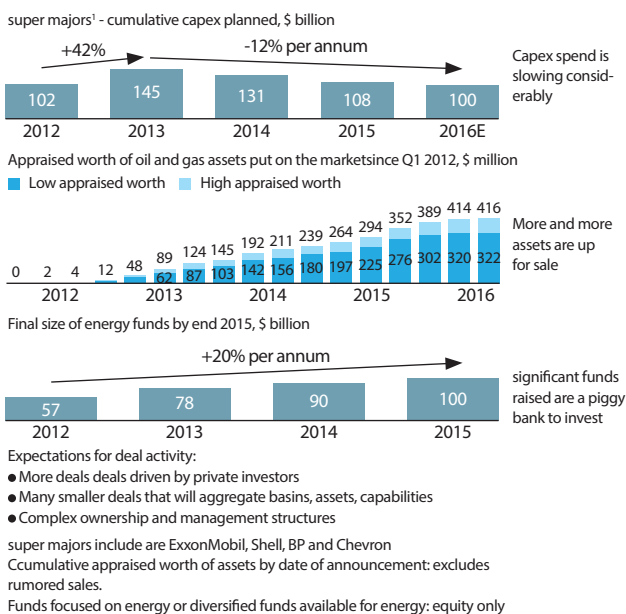
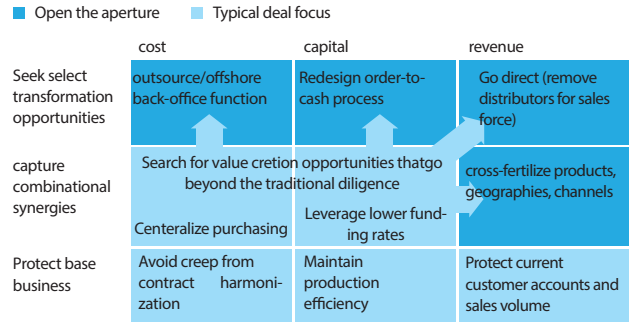


Figure 1



Source: McKinsey Merger Management Practice

Figure 2

The different dynamics in the oil and gas business are creating unique opportunities for oilfield service companies. Those opportunities are both technical and economic and will define the value proposition that service companies offer to customers. The path forward is to drive production volumes (and service volumes) and make oil and gas production more competitive and profitable by lowering per barrel of oil equivalent (boe) cost. How do we get there? Efficiency is critical, but we must have a holistic view of efficiency that captures the production benefits of applying more effort more intelligently to a given reservoir and goes beyond traditional definitions of cost control. The recent collapse in the oil price has further intensified pressure on cash flows in an industry already saddled with low returns on capital. Cost-cutting measures are ramping up as the industry responds with belt tightening, as seen in prior downturns. In addition, while the focus is rightly on resetting the cost base, companies still need to renew their resource base for long-term sustainability. M&A is an option to address several of these challenges—luring buyers with the opportunity to high grade portfolios, supercharge operational improvements, and acquire strategic capability and sources of renewal for the future.

M&As represent two of a nearly limitless variety of ways in which firms can combine resources to accomplish an objective; they are a part of the corporate and business strategy of a firm and are used strategically by firms in order to survive and grow. Our final goal here is creating a New Investment Strategy to maximize our Portfolio's Return. The time is ripe for buyers in the upstream M&A market to make deals and maximize the chances of creating value. In general, in the process of M&A, there are always at least two main parties that should be given due consideration. Seller's side and buyer's side. To create a successful partnership, the components of this process must always be designed in a precise, two-sided view in the form of a win-win game. In fact, the different parts of this chain are different strategies that are formulated in the following main design strategies of the company and are compliant to each other. Successful M&A requires both a solid strategy and excellence in integration planning and execution.

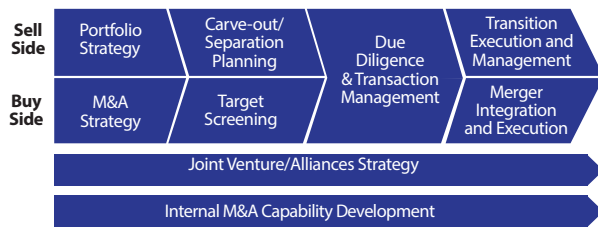


Figure 3- Merger, Acquisition, Divestiture and Alliance Procedure (source: Accenture)

For a successful M&A, we should use a value driven rather than a purely financial approach for identifying and screening acquisition targets or merger partners. We have to design screening criteria to assess whether the deal will fill strategic gaps, and frameworks to identify and quantify the expected value from an acquisition or merger. Also, a key activity in any merger or acquisition, of course, is due diligence. The benefits of a focused, yet thorough due diligence effort is vital in helping companies understand what they are buying—and in creating the right strategies to obtain the desired value from a merger or acquisition. Due diligence capabilities include the following:

- Conducting strategic, operational and IT due diligence
- Identifying and estimating the impact of synergies
- Identifying dis-synergies and potential risks

While choosing the right acquisition targets and quickly identifying sources of value are critical, effectively integrating these acquisitions into the enterprise may be the single most important M&A success factor. There are eight key factors that contribute to merger integration success:

1. Jump-starting integration activities well before deal closure.
2. Focusing the merger integration agenda on value creation, not just integration.
3. Focusing on the top five critical decisions for the current period.
4. Addressing potential cultural issues early.
5. Ensuring comprehensive, frequent and consistent communications.
6. Moving quickly to implement bold changes.
7. Providing strong governance and tight process controls.
8. Maximizing synergy opportunities.

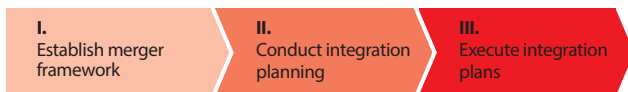


Figure 4- three-phase approach to merger integration (source: Accenture).

Mergers and acquisitions are not the only ways of generating new business value and enhancing competitive positioning. Executing deals on the “sell” side—divestitures of selected assets—also can be part of a strategy for high performance by helping companies effectively tailor their portfolio of businesses and raise capital for acquisitions in markets and businesses that have greater strategic ap-



peal. In addition to acquiring or shedding assets, alliances and joint ventures can be critical to the growth strategies of many companies. We can show that companies with above average M&A capabilities achieve greater revenue growth, return on capital employed, and total shareholder returns. They also are more likely than other companies to achieve the desired strategic and financial targets of each deal. In other words, a robust M&A capability is a key source of competitive advantage.

In fact, successful implementation of M&A needs some planning and program which require some capabilities. Those capabilities are embedded in Accenture’s powerful M&A Maturity Model, which was developed based on more than 100 interviews with corporate development officials at leading serial acquirers and experience with more than 500 Accenture M&A projects in the past five years.

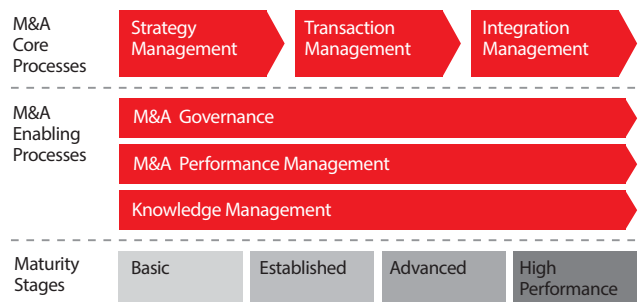


Figure 5- Stages of the Accenture M&A Maturity Model*

At the end, Scrutiny of capital and operating expenditures (CAPEX and OPEX), and liabilities is intensifying as expectations rise that M&A in the oil and gas sector will accelerate. When deal activity in the upstream sector inevitably rebounds, it will become clear that it is now a buyer’s market. It critically assesses sellers’ CAPEX and OPEX forecasts in light of the technical condition of the assets, and generates figures for scenarios that buyers wish to see modelled when negotiating price.

Human Resources and Organizational Challenge in M&A

What Should We Do?

Rouzbeh Mircharkhchian
Project Manager

Certainly, none of the operators of the companies that enter into the process of merger and acquisition are looking to increase the challenge in their organizations. Their ultimate goal is to increase their growth speed, productivity, profitability and market share. However, this process is not simple. Indeed, conflict and challenge are inherent in such processes and this is not limited to oil companies only. One of the most important organizational issues is the matter of human resources and the management of possible cultural conflicts in such processes. The purpose of this note is to give an overview of such issues and finding a solution to reduce them in the groups that enter into the process of merger and acquisition.

Why Is Everything Important When It Comes to Human Resources?

Imagine the organizations whose employees have the farthest cultural understanding of each other. Though this is often the case in companies of different nationalities, it also might be the issue of companies in a country but having employees from different ethnic groups. If we add different organizational cultures, and different written or unwritten rules, we will find two completely different companies with different cultural styles. Such how, if these companies want to enter into the process of merging and acquisitions, they should pay great attention to their cultural differences, because it can even fail the intended process. According to research results, cultural issues have caused 30% of the failures in merger processes. Simple reasons, such as the personnel's casual clothing habit or organizational flexibility during the hours of entry and exit, and changing the procedure after merger or acquisition happened, can get the organization into trouble. However, managers generally tend to pay attention to economic issues only and to ignore the staffing and cultural issues of the organization; a tendency that might be costly for them.

Managers generally tend to pay attention to economic issues only and to ignore the staffing and cultural issues of the organization; a tendency that might be costly for them.

Since this type of organizational change is often the most complex change and generally causes a major change in the structure of the organizations involved, it is essential that all of personnel understand these changes and incorporate them correctly in their daily relationships. If not, the main goals of mergers or acquisitions may face a risk of failure.

Two broad categories of mergers are horizontal mergers, meaning merging two rivals to increase market share (such as the integration of Smith International and Schlumberger in the drilling services market) and vertical mergers meaning merging two organizations in different levels of the existing value chain (mergers between major upstream and downstream oil companies in the 70's and 80's). Among those, Horizontal mergers seem to face more challenges in terms of manpower. Fewer changes in vertical mergers might happen due to the non-homogeneity nature of the activities of the two organizations. Therefore, despite the difference in organizational cultures and personnel expectations, without expecting a fundamental structural change, and indeed maintaining the cultures in relatively independent environments, they are likely to succeed. But in the horizontal processes, due to the gender of the activities, the details of the changes must be fully understood by

the employees of both organizations in order to expect a successful integration. For example, two companies active in the field of drilling services will need to re-review their structure, remove some parallel units and integrate others to integrate the entire set in the event of a merger; but if a company produces oil merges with an active company in the field of product processing or distribution, due to the lack of joint activities,

less cultural problems might happen.

Difference in decision-making, leadership, degree of risk taking, or how individuals interact with the organization are some examples of two companies' cultural difference. An organization may make its decisions by consensus and naturally spend a great deal of time on this process; however, under the new conditions after the merger, it needs quick decision making which is not ready for. Or, an organization with a high level of teamwork is integrated into an organization where members work mainly individually. There will be serious problems to achieve new

Organizational Consequences

organizational goals. Losing key personnel due to the job insecurity feeling or uncertainty in their organizational role can be another side effects of such big changes in the companies which shall be addressed wisely.

Personnel Issues

Possibility of being dismissed may be the main concern of the staff of organizations involved in mergers and acquisitions. If one of the goals of this process is to reduce overhead costs, it seems that such concern is not so unreal. Such companies certainly should consider personnel release as a means of reducing costs. But this should be done with an in-depth evaluation to reduce its organizational impacts as much as possible. Effects such as employees' lack of motivation, creativity reduction and negligence of organizational goals can be seen as signs of personnel insecurity in the company. But, apart from worrying about unemployment, some other concerns might arise at different levels of the organization. The concerns about the change in organizational culture, lack of access to company management levels, the reduction of individual authority, and flexibility change of the organization towards personnel are among these. Also, people's confusion after merging or acquisition and the lack of full understanding of procedures can reduce their effectiveness, eventually reducing or losing their organizational role. Though, merger's effects can be used to encourage people to accept new changes as well. Organizations that have proper planning for the transition period and their employees are prepared to accept changes, are less likely to face problems. If there are effective performance evaluation systems for personnel, employees can be sure that they are evaluated based on their performance and this will reduce the concern of individuals, especially those with appropriate performance. Meanwhile, creating appropriate incentives when the organization achieves its predetermined goals; not only reduces the employees' concern, but it also creates more hope for those who have shown more cooperation in achieving the mentioned goals.

What Should We Do?

If we divide the process of M&A into different steps, the most important step after specifying the goals and determining a specific target partner is to carry out Due Diligence on all of target company's processes and structural dimensions. Meanwhile, on one hand all the added values resulting from the realization of the merger and acquisition process are identified, and on the other hand, the risks of failing to realize these values and how to reduce such risks are also assessed. Generally, in this step everything is based on economic data and legal proce-

dures, and cultural issues are less addressed by studies. Moreover, even in the case of such studies, it is less likely that a merger or acquisition be stopped or even slowed down due to possible cultural mismatches between the two organizations. In this case, it is the duty of senior executives to prevent the transformation of cultural and personnel issues into a weakening factor in the process of merging or acquisition. This is performed in the next steps of the process, Integration Planning and Implementation, the implementation of which is generally the responsibility of the human resources managers of the two organizations involved in the process.

One of the most commonly used measures in these circumstances is the selection of a set of specific organizational attributes and sharing them with the employees. Personnel should clearly know if the new organization works based on employees' creativity, focus on individuals and the flexibility of staff, or the obedience from the top manager, teamwork and organizational discipline is

If we divide M&A process into different steps, an important step after specifying the goals and determining a specific target partner is to carry out Due Diligence on all of target company's structural dimensions.

in the first place. Meanwhile, the issue of "time" is a very important factor in achieving this common understanding among all of the organization sections. The issue is not generally taken seriously by the decision makers' rush to reach the overall financial goals of the new organization, which ultimately makes it difficult or impossible to achieve these goals. Although, it should be noted that organizations must respond to their stakeholders

and may not be able to spend much time on a vague and often qualitative matter. For this reason, cultural issues should be linked to tangible and measurable issues so that effect of changes in the organization and whether or not the program for creating change is right or wrong can be judged. Creating a precise appraisal of teamwork and measuring their outcomes after applying change plans or is a way to measure the effectiveness of these programs. It should be noted that the main goal of all of above considerations is to increase the organization efficiency and maintaining the employees' rights after the process of merger and acquisition. If we admit that at the end, these are people who make the organization's breakthroughs or failures, organizational and personnel issues will be considered connected, and their co-operation will be used to achieve common goals. At the same time, it's important to note that companies are moving into a process of merger and acquisition in order to achieve higher profits and added values, and certainly such thing won't happen without any sort of dissatisfaction. Nevertheless, if effective evaluations be performed to measure the suitability of individuals and their degree of compliance with the new organizational goals, a positive screening will also be made and ultimately the best people will also be the most satisfied ones.

M&A in upstream industry

Cultural and Economical Risks and CSFs of M&A

Elina Bagheri
Project Planing Expert

M&A; Born of a new company

A process which ends the life of an independent company and start a new combination between two companies is not separated from cultural and economic issues. The main reasons of utilizing such a method are economic challenges and also planning to increase productivity and improvement in financing, tax and operation and increasing control over the value chain, create monopolies, increase market share. On the contrary, the most important reasons of the cases with failures in this process are cultural problems.

By merging two organizations that are supposed to work with their own core competencies in the new form, one of the initial effects is sending a special message to the competitors or other market players; and this message has both internal and external consequences. One of the biggest problems that mostly human resource aspect is involved in is the fear of a change in the entire organizational pyramid, especially in the governmental sector or those who lack dynamic culture in their organization. This issue is so important that it can affect all other sectors; particularly as security is one of the basic needs of individuals and a sense of insecurity can make people act unreasonably. This issue, especially in horizontal merging, makes the contest more serious among key personnel due to the common sectors in both organizations with common goals. On the other hand,), misunderstanding of the processes, lack of creating a feeling of integrity, periodization and lack of portfolio management would be the main concerns of the companies in the vertical merger and in the various layers of chain value or even other industries (conglomerate).

Changing the viewpoint from a competitor to an organizational section requires lots of effort either for the main company or for the target company among individuals and the organization itself.

Considering all these difficulties, M&A happens for synergy, increase of added value, and proactively with a look toward future. However, in non-developed countries, general view on this issue is negative so that conditions such as privatization, legal requirements, financial problems or approaching bankruptcy, retirement or job change, and reduction in competitiveness, generally

lead companies in a way that can affect the goal.

Apart from all of these issues, it is crucial to know the economic and cultural risks as well as their solutions. In the following, we are going to reach a proper viewpoint of the situation and required backgrounds by pointing out these risks and then success factors.

M&A process risks

The economic issue is the most important decision for M&A, especially in the financial possession case which investment institutes have a fundamental role in it. This consists of attractive points as well as many risks at the same time which are referred as below:

- 1- Weakness in financial advice and exaggeration in calculating the net profit of the merger
- 2- Selection of inappropriate indicators for estimations
- 3- Mistake in modeling the new structure
- 4- Weakness in the advice of the new tax and accounting system
- 5- Weakness in economic and technical estimations
- 6- Not considering the role of investment banks or capital supplier institutions as one of the M & A elements
- 7- Not considering retaining the stakeholders' interests as key stakeholders
- 8- Wrong valuation of various assets
- 9- Selection of unsuitable payment methods
- 10- The risks associated with gap of information interchange between the seller and the buyer, and hence its impact on estimations and predictions
- 11- The insufficient acknowledgement of companies and shareholders on financial and strategic aspects
- 12- Possibility of transparency lack in financial and accounting information
- 13- Different accounting standards of the two companies
- 14- Ignoring consequences of the M&A announcement, lack of preparation to avoid sales decline or shareholders fears

Cultural Risks of M&A

However the cultural factor that is very effective and generally neglected, includes the conventions, behaviors, methods, professional ethics and the basis of the organization. This factor has a noticeable impact on the cooperation, partnership and understanding that underlie M & A. Some of the most important risks associat-

a big problem that mostly HR aspect is involved in is the fear of a change in the entire organizational pyramid

ed with this issue are the following:

- 1- Ignoring cultural factors in financial calculations
- 2- Conflict of interest between key personnel of the two organizations
- 3- The inability of two sets to create synergy
- 4- Lack of proper and adequate information due to the fear of sharing in individuals
- 5- Language and Culture Misalignment, especially in International Mergers
- 6- Lack of clarity in definition of the purpose and philosophy of M & A
- 7- Conflict between personal goals, among key personnel
- 8- Reduction of risk appetite due to uncertainties and unpredictable factors
- 9- A sense of fear and shakiness in the position of key personnel
- 10- Reduction of the job security for the staff and the loss of key staff due to uncertain future
- 11- Differences in management styles for controlling the new structure
- 12- Differences in values, customs, rules and regulations, professional ethics and business
- 13- The difficulty of quantification and evaluating its cultural factors
- 14- Failure to have the right strategy in dealing with shareholders
- 15- Competition of the two companies to overcome their culture and power
- 16- Shock and people's fear of a big change
- 17- Differences in processes and management methods
- 18- Focus on the interests of senior executives and ignoring important factors from the point of view of the society, employees and shareholders

Important factors to consider

However, in addition to considering the risks and implementing the solution, companies must focus on the success factors to support them through this difficult path. Some of points related to economic, cultural and moral factors are mentioned in the following:

- 1- Selecting a strategy, reviewing it over time and avoiding confusion in a variety of tools and strategies
- 2- Focusing on business principles, not highlighting M & A too much and creating an atmosphere of certainty and confidence in the organization
- 3- A clear definition of goals, work descriptions and the main function of M & A
- 4- Determining the correct performance indicators to measure the value of M & A
- 5- Information circulation at different levels of the two organizations in order to coincide with the goals and ac-

ceptance of the parties

- 6- Defining M & A as a project and selecting a project manager to keep the two companies away from the business principle
- 7- Emphasis on risk management
- 8- Considering the incentive for people who contribute to the creation and success of M & A
- 9- the primary focus on maintaining values and efficiency of each company and creating an integration in the transition and post-stabilization phase, focusing on creating a value greater than the sum of the values of the two companies
- 10- Highlighting the owner role in leading and working as the point of attachment, commitment and alignment between senior executives of both companies (top-down leadership)
- 11- Establishing a balance through 90/10 law. 90 % of the employees of both organizations must spend 90 % of their time on daily routines and 10 % of it on the integrity of 2 companies. 10 % of employees of two companies must spend 90 % of their time on integrity and 10 % on daily routines of 2 companies.

The cultural factor that is effective and neglected, includes the conventions, behaviors, professional ethics and the basis of the organization.

12- Considering the challenges of key benefit seekers even before the challenges of integrity

13- Recruiting and employing M&A consultancy firms and using them to evaluating the value of each business, creating marketing documents. Marketing business, having interviews, selecting qualified candidates, editing and evaluating of secret contracts on

behalf of the employer, providing wisdom and negotiating skills instead of employer, solving financial problems

14- Evaluating the success of M&A project; Not only based on technical factors of time, costs and range, but also based on strategic factors like benefit seekers satisfaction, increasing shareholders value, organizational advantages, and business goals.

15- Selecting the appropriate project team and manager, aware of the procedure and committed to results

16- Creating an alignment between goals, managers and human resources by creating encouraging and rewarding mechanisms

17- Special attention to the IT systems for integrating and using synergistic tools

18- Training and coaching human resources to learn needed skills for new roles

19- Education and application of methods based on scenarios in all the organizational levels due to many uncertainties

20- Using project management tools and technics to increase the speed of integration such as Agile methods

21- Recognizing and keeping suitable human resources of both companies and the precaution in structural changes in this direction

Merger and Acquisition Strategies

US Oil Industry; a Good Example for Successful M&As

Abdolsamad Rahmati
Energy Expert

A Definition of Merger and Acquisition

Organization life cycle is like a human life cycle. We, as human being, should do some efforts to guarantee the survival of our kind in response to different mental, physical and, environmental situations; likewise, if proper action is not taken based on environmental, physical and mental situations of the organization, the organization will face some problems concerning survival. Different strategies are proposed for organization life cycle, and each organization should use strategies according to environmental situations, strategies like variety in product, or services, variety in market, variety in vertical chain, shrinking and oversizing, etc. These are like treatment that if not applied in due time will lead the sickness to become chronic and fatal. For each organization, proactive actions are the best option prescribed by the organization doctors "Strategists". One of the most important stages in the planning of strategies is the designed implementation method in the organization. Proactive actions or even reactive ones might be prescribed for the organization; however, the problem is usually on how to implement these treatment prescriptions. One of the most complicated organizational version is M&A strategies that if prescribed for the organization should be carefully implemented.

Organizations need to attract internal and external resources, experienced managers, advanced technologies or even various markets in their growth and development. These could be done through cooperation with new stakeholders inside or outside of the country. This policy is named M&A. M&A strategies require different stages that considering the experienced counselors' access to information banks throughout the country can be done in a proper way. The analysis of the current status, recognizing the real need of the organization, preparing the documents in standard ways and finally professional negotiation with the investors are some of the complicated stages of this procedures.

Two firms can be merged when they have equal sizes and the resulting firm is a unified firm. In fact, merger is an activity where two firms agree to be mixed and have synergy over working operations. Acquisition is when

one firm buy the other one and in this activity, processes and product are the same. This is referred to as takeover or buyout. In other words, it is an action where one of the firms buy significant portion of the other firms and control its management, but the typology of merger and acquisition is in a way that it consists of different dimension and there are different forms of M&A. Communication with board of directors, employees and shareholders, acquisition financing procedure, share type and movement type in the chain are different ways of merger and acquisition. Successful deals in this respect show that in order to achieve success in a merger and acquisition, the deal should be made according to the following conditions:

1. It should be done in a friendly atmosphere and the firms have the potential to be changed.
2. The target firm should not be in great debt and creativity be kept in the new firm.

3. It completes the resources and properties of the buying firms

4. It should not lay a heavy burden on the new firm.

5. The process of choosing the target firm should be exact and appropriate. New cooperation mergers and acquisition of firms are done according to mission announcement and vision announcement of the firm. So, it should reflect the firm strategies to achieve its goal and progress in the related industry.

Merger and acquisition of firms require an exact disciplinary perspective by the firm decision makers.

The Advantages of Merger and Acquisition

More and better competitive capabilities, more extensive geographical coverage, more financial resources for investment in research and development areas and higher capacities, cost reduction capabilities, stronger technological skills, more ability to implement products and services for the future generation.

Problems Arising Out of Merger and Acquisition

Resistance by the employees, conflicts in management style and organizational culture, problems in the merger and integration of different firms' operations, difficulties beyond expectation concerning cost in accessing expected cost – effectiveness, sharing skills, and accessing improved competitiveness.

Different strategies are proposed for organization life cycle, and each organization should use strategies according to environmental situations, strategies like variety in product, or services, variety in market, etc



Merger and Acquisition in Energy Section of the USA

After the decline in oil prices and recess in different sections of oil industry, there was hope among many counselors and oil companies for the oil price and the market to return to normalcy. So, most of those oil companies pursue their programs based on crude oil price of 50 dollars or even lower. In line with this, merger, acquisition and integration topic has had good effect in the US. The recent Merger and acquisition in the US, especially in rigging sector, has resulted in the optimization of financial situations and decrease in the final costs, integration and the variety in the services provided to the customers. Using this perspective, excavating companies guaranteed their survival by adopting the best strategies and do not lose the market share.

The trading value of mergers and acquisitions in the US energy sector has been increasing over the past few years and the United States is at the forefront of this strategy. According to the Merge Market report, M & A in the energy, mining and welfare sector (EMU) in the first quarter of 2017 rose by 123 compared to its previous year. In the first quarter of 2017, about 304 transactions worth \$ 165.4 billion were recorded, which is the second largest transaction value recorded in one season since 2001.

The revival of shale activity and relative stability in the price of crude oil resulted in transactions in the EMU sector, accounting for nearly 85% of the global energy market (EMU) in the first quarter of 2017. The largest merger and acquisition activities were in the energy sector of the United States

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due to the start of operations in the Permian basin oil reserves, where oil companies were seeking to take a share of this activity. In the first three months of 2017, about 88 transactions worth \$ 85.3 billion were recorded in the United States. The Merge Market analysis shows that the highest transaction value in the energy sector has been recorded by the ConocoPhillips, which has sold \$ 13.3 billion of its assets in the Canadian Oil Sands sector to Cenovus.

What Are the Reason of US Companies Success in M&A?

The most important reasons behind the success of the United States in the M&A are financial and economic transparency, as well as the existence of order in its current laws. The precise planning and exploitation of golden opportunities for achieving large profits and sustaining activity in the energy market, with the fluctuations of recent years, certainly depends on the forecasting and the exploitation of new opportunities. Mergers and acquisitions show that this is an attractive route to higher incomes, and this can be seen from the rapid growth of mergers and acquisitions in recent years.

We live in an age that, along with rapid and widespread changes in the rapidly changing environment and dynamics of science and technology, issues such as financial and monetary crises are constantly entering the industry, and they must adapt to these changes. In this competitive field, industries can survive, seeking innovation, and reacting to the changing responses. Perhaps change is the most important element of the business environment. Change seems to be in line with the

goals of each company, based on a targeted and well-planned strategy of exit from the crisis; the first condition of which is to change thinking towards change. The question that arises in the following is why this economic behavior, with favorable results from the countries of the region and other major economies, is not used in the regional industries, especially in the oil services sector, despite the financial pressures of recent years on the agenda. On one hand, factors such as fear of unknowns, lack of control, fear of loss of image, and continuing habits are among the most important factors that do not allow companies to change and formulate appropriate strategies; on the other hand, stands the issue of lack of transparency in financial and economic situations of companies. Accordingly, the topics of "discipline and transparency", "changing attitudes" and "proper strategies according to targets" seem to be among the most important issues facing companies.

Legal and Contractual Challenges for M&A of Companies

What Are the Challenges? What Are the Solutions?

Mustafa Baharizadeh
Legal Expert

Strategic Alliances

The international arena of oil and gas industry has the conditions, qualities and needs that are undergoing changes over time and in the short term. The players in this arena, especially the important ones which are usually national oil companies (NOC), integrated oil and gas companies (IOC) or engineering and technical service providers, must adapt to these conditions and needs in order to survive in this area and be able to maximize their benefits at the lowest cost.

Currently, the job opportunities in the field of oil, gas and energy are not widespread as they were in the past decades, and due to the high value of these underground and natural resources, the cost and benefits of a project must be matched so that a project can be implemented. Also, the interests of many international companies overlap in different countries. Therefore, the formation of "strategic alliances" should be carried out in the form of joint cooperation in a long-term contract or common legal structure, such as the organizing a new company or cooperation in an existing company. The reasons for mergers and acquisitions, usually include gaining power in the market, increasing market share, increasing shareholder's wealth, internationalization, reducing costs, increasing tax benefits, increasing efficiency, improving firms, preventing unemployment, being in international markets, preventing destructive effects on the competitive structure of the market, preventing non-competitive destructive effects, etc. Corporate M&A tools must be defined in the legal and contractual structures of the countries, in order to implement the company's plans in accordance with legal and contractual patterns in the legal structure of a country or a union after the determination of goals and strategy by the company directors. In other words, "flexibility" and "collaboration" in the legal structure must exist to fulfill M&A in the companies. Hence, in this article, some of the existing challenges of mergers and acquisitions of companies in some of the Middle East countries are mentioned.

Legal Challenges in Mergers and Acquisitions

Not only there is no separate law for mergers and acquisitions, but also the law on commerce and the law on the reform of the trade law do not mention the issue of merging or ownership of a company by another company. However, a third party company with a new legal personality can be created simply by disbanding two legal entities and integrating their assets into one

another. An increase in the financial and asset capability of the two companies by collecting their assets in one account or as a company is not clearly the point to merge the two companies and to use the benefits of integration. Therefore, there is no legal structure or guideline for this process, while

A) In some developed countries, there is a "corporate merger and acquisition law" to comply based on the rules of

the corporate procedure.

B) In some countries, these regulations are incorporated with their trade law and there are no separate laws.

C) In some other countries, there is only a manual for establishing a merger and acquisition which is used as a tool for the adoption of a single procedure in these countries and the recognition of other international companies.

The merger has certain conditions for the registration of merging companies, the creation of a third party, the shareholders of the two companies, the firms that lend money to the merging companies, etc. These conditions and effects should be specified in the rules to inform the companies. Stock transfer is not very common in this area and there exist some unclear issues in this section. However this subject is under discussion among lawyers due to some corporate law. Some lawyers consider it to be void because the ownership of the shares by the company itself creates a "vicious circle". They consider the company only as the owner of the property that cannot own the stock. However there is a different opinion that consider this issue permissible since there is no explicit restriction on the law of commerce to own a company's shares by itself. They also declare that the shares are exchanged in the stock market and generally there is no legal prohibition on the purchase of shares by legal entities.

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The acquisition problems of companies are the same as those of merging them; so it is not explicit. For example, is it not clear that how much shares and the percentage of shares should be purchased to acquire smaller companies. Whether it is enough to buy more than 50% of the shares, more than three quarters, or 100% of the shares in order to make a majority decision in general and attend board meetings of the company. In international procedures, it is sufficient to own more than 50% of the company shares by the larger company in order to take its control.

Another point in mergers and acquisitions of companies in the oil industry is that most of the major oil and energy companies are either state-owned companies or semi-public companies owned by large public institutions. This makes it hard to decide whether to buy a stock, merge two companies, or sell a part of company's stock. The most important tool for adopting these strategies in the oil industry is the discretion of the company's shareholders and its directors to select a suitable solution. However, there

is no discretion for decision-making as long as the shareholder is a state company or a public entity such as investment funds and the company has to go on its own in any cases. In other words, the structure of corporations is not matched with the business company's members in these companies to use even a few available commercial laws for this work. Therefore, the application of merger and acquisition technique

in oil companies at first requires a private company and sole discretion of the shareholders and their elected executives for the adoption of these solutions.

M&A of companies, in the oil and gas sector of the region, is an unknown topic which in spite of the need for domestic and international markets in this area, it is not applied in legal structures

Contractual challenges in mergers and acquisitions

Regardless of the legal challenges, there is always a precondition for merging and acquisitions which is to have a cooperative relationship between the two companies in the oil industry. The most mergers are often combined with homogeneous mergers. Usually the creation of a value chain in the services provided in the oil industry cannot be achieved merely by merging the shares of two companies or owning a company by another company because the offered services of the companies are not consistent. Some problems exist such as inequality of stock levels and an imbalance in the companies' size and capital, which occur when a company is much smaller compared to another one, but they both require long-term cooperation and service provision, to maintain the legal personality of each of the two companies. This method usually has different names in the oil industry, such as long-term cooperation agreements or joint operations contracts, or contracts for the participation in production and investment and etc.



In this kind of partnership, it is noticeable that despite the merger of two companies in a project or oil operation, which sometimes will take 20 or 30 years, the legal person-

ality of each of the partnership parties will be preserved, and the two companies will provide services together. The problem with commercial and economic law in this area is that the framework of this type of cooperation has been identified, but no work has been defined for these types of partnerships. Therefore, many of the tax laws, businesses salaries, intellectual property rights derived from these industrial

activities and etc. are not clear while these problems are resolved at the level of international contracts.

M&A and Lack of Legal Infrastructures in the Region

The M&A of companies, especially in the oil and gas sector of the region, is an unknown topic which in spite of the need for domestic and international markets in this area, it is not applied in legal structures due to the lack of legal infrastructure and the necessary legal and contractual tools. Setting off two companies and the creation of a new company with a new name and legal rights from the former companies, which cannot use the services or brand of them is the only way to integrate and own rights in a very simple and primitive manner. Also the major ownership of the state or quasi-governmental and semi-governmental institutions in the major oil industry companies prevents them to share the interests through the merger or acquisition in different ways. Therefore, it seems that the privatization, transferring the share of these companies to below 50%, the definition of new legal instruments and contractual terms for the merger and acquisition are the prerequisite for the implementation of these commercial techniques to advance and improve trading in this industry.

As a Solution for Cost Management

M&A in Rig Operation Industry

Melika Mohammadpour
BD Expert

Upstream; An Important Section of Oil & Gas Industry

Technological and structural changes in the global economy and in the energy sector are among the requirements to diversify analytical studies of the energy economy, management and investment in industries, especially the oil industry. The upstream segment of the oil industry includes studies and actions related to exploration, drilling, exploitation, conservation of oil resources, transfer, storage or any activity that leads to the optimal and maximum withdrawal of oil resources, and feeds the downstream industries. According to a previous study by the author, using the AHP methodology to prioritize investment in the Iranian oil industry based on key investment criteria (value added, attracting foreign investment, risk management and linking to the domestic economy) and using the Expert Choice software has been calculated. In this industry, the investments mostly are focused on upstream section. One of the specific upstream segments is rig operation industry.

Drilling Market Structure

Peter Drucker, the father of modern management science, states that each company has two main tasks: innovation and marketing. If one looks at the most successful global brands in every part, including industrial and retail, or production and services, the meaning of Drucker's words becomes clearer. All industries in the economy have diverse markets and the structure of the market is the nature and extent of competition between similar firms in an industry. An essential factor in determining the effective and appropriate tools for marketing in an industry is to know the market structure of that industry.

The perfect competition market is a market for competition, where many independent buyers and sellers informant of different situations (prices, etc.) exchange similar products.

In monopolistic competition all perfect market conditions exist, except the condition of standard goods. In other words, the products offered by vendors can be distinct.

In multilateral monopolies, several buyers and sellers are active. If the number of vendors is few, sale multilateral monopoly happens and, if the number of buyers is

limited, a multilateral purchase monopoly occurs.

Perfect monopoly occurs when there is only one supplier on the market. In this case, the strength of the firm in controlling the market and the price are almost complete. Monopoly results from three factors: geographic factors, technology and natural factors.

The Comparison of different markets

	Advertisement impact	Entry to the industry	Product differentiation	The entrepreneur effects on the price	The number of providers
Perfect competition	No	Simple	No	No	Many
Monopolistic competition	To a large extent	Simple	Medium to High	Few	Rather high
Multi-lateral completion	Few	Difficult	Medium	High	Few
Perfect competition	No	Impossible	No	Very high	1

The status of drilling industry market

Service type	Provision	Demand
Long horizontal drilling, particular measurement, LWD	Multilateral monopoly	Multilateral monopoly
-	Monopoly competition	Other drilling services
Drilling Rig	Multilateral monopoly	-

The market for drilling rigs is in the state of multilateral monopoly according to the features proposed in the supply and demand segment. One of the key features of multilateral monopoly is the difficulty of entering the industry, which is due to the nature of the capitalism of the industry, with high investment and compliance with certain standards and laws, and therefore leaving the industry has a high inertia. Now, we want to analyze the state of the rig operation industry with the concepts of competition and competitive strategies in business management and through the five-factor Porter model.

Analysis of the drilling industry

How the five factors named as competitive factors by Porter are described?

1- Threat of the entrance of alternative goods:

The existence of new energies is rapidly expanding and penetrating. Solar, wind, water, biomass, biogas and geothermal energies are the most important ones. Factors such as climate change due to greenhouse gas accumulation and rising demand for energy consumption worldwide are among the most important causes of the reinforcement of new energies. On the other hand, the discovery and development of shale oil extraction threatens the industry as alternatives.

2- The bargaining power of the suppliers

In the current situation, companies that have the ability to provide services rig holders are in a very competitive situation and try to work at the lowest possible price to maintain their market.

3- The threat of new rivals entering

With lots of international drilling rigs with no contract, many rivals, especially in the offshore area, are diverted to different markets to look at their livelihoods in other regional markets (and not just their own). In other words, it is likely that the market is subject to multiple multilateral monopolies (both sides of the supply and demand have a monopoly of multilateralism transform into multilateral monopoly of demand, which will make it harder for rig owners.

4- Bargaining power of buyers

The owners of oil wells are limited and have a monopoly market. On the other hand, due to the reduction in oil prices, there are limited projects that cause the bargaining power of the offshore area to be extremely high, which, in the current sensitive market conditions, this power can lead to the imposition of prices on the industry.

5- Competition between current competitors

Despite the multilateral monopoly in the rig holder market, because of the high cost of dwelling in huge amounts of drilling machines and a limited number of active projects, it requires a strong competition between rivals in order to prevent the unemployment of drilling of machines, especially at offshore.

Based on the above analysis, the rig industry desperately needs competitive advantage. Competitive advantage typically comes from one of the two pillars of quality and cost. Regarding quality, the characteristics of the requested work and the standards are announced through the main employers and on the basis of which the contract is written and calculated. In terms of cost, cost management strategies are classified into two general categories:

1. Cost Management at macro level (drilling market)
2. Cost management at micro level (active enterprises)

Here, considering the coherence of the issues raised with the subject of the paper, we examine the cost-management at the macro level:

1.1. SBU Development (Strategic Business Unit)

The development of strategic business units in the form of agreements on the exploitation of shared facilities among the players in the rig industry can be effective in reducing fixed costs. This stage of sharing is accompanied by regulatory and computational difficulties and can be useful in terms of implementation.

1.2. Creating a Holding; merger or acquisition

An executive and significant solution in cost management is the reduction of overhead costs. Overhead costs can serve one, two or more. Given the declining productivity of overhead costs that is created in case of merger-acquisition of the rigs, the optimal conditions for maintaining, repairing and controlling the towers can be expected. In fact, to a lesser extent, the profits of existing firms in the industry have been reduced that in order to preventing monetary

loss, M&A can be a fundamental strategy and in a way transforming to a holding. The established holding can have the following advantages through playing supervisory and developmental roles.

1.2.1 While preserving the life of national capital, expertise, HR, financial capital, etc. it facilitates continuation of work in the current situation with a single flag.

1.2.2. Preventing the loss of company capital and successive losses

1.2.3. Integrated and stronger headquarters as a result of appropriate classroom activities and encouragement to international markets.

In other words, increasing the size of rig owners can be effective in enhancing competitive advantage in both quality and cost domains. As a result of this approach, there have recently been many examples of mergers or acquisitions of international companies in the set of value chain that are being carried out, which are referred to in several examples:

- EnSCO, with 20 floaters and 32 jackups was merged with the Atwood Oceanics Company with 6 floaters and 5 jackups, in May 2017, with approximately \$850 million.
- TransOcean, a Swiss company specialized in the sale of all jackups over 15 items, of which five were under construction, went to the Norwegian company Borr drilling (Magni) in March 2017 and limited its scope to deep waters. The transaction worth approximately \$35.1 billion.
- The General Electric Oil and Gas sector in July 2017 was merged with the American Baker Hughes and created the new Baker Hughes a GE Company, with \$ 23 billion in annual revenue.

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Regional Focus

NOCs and a Glance at Training Procedures in the Region

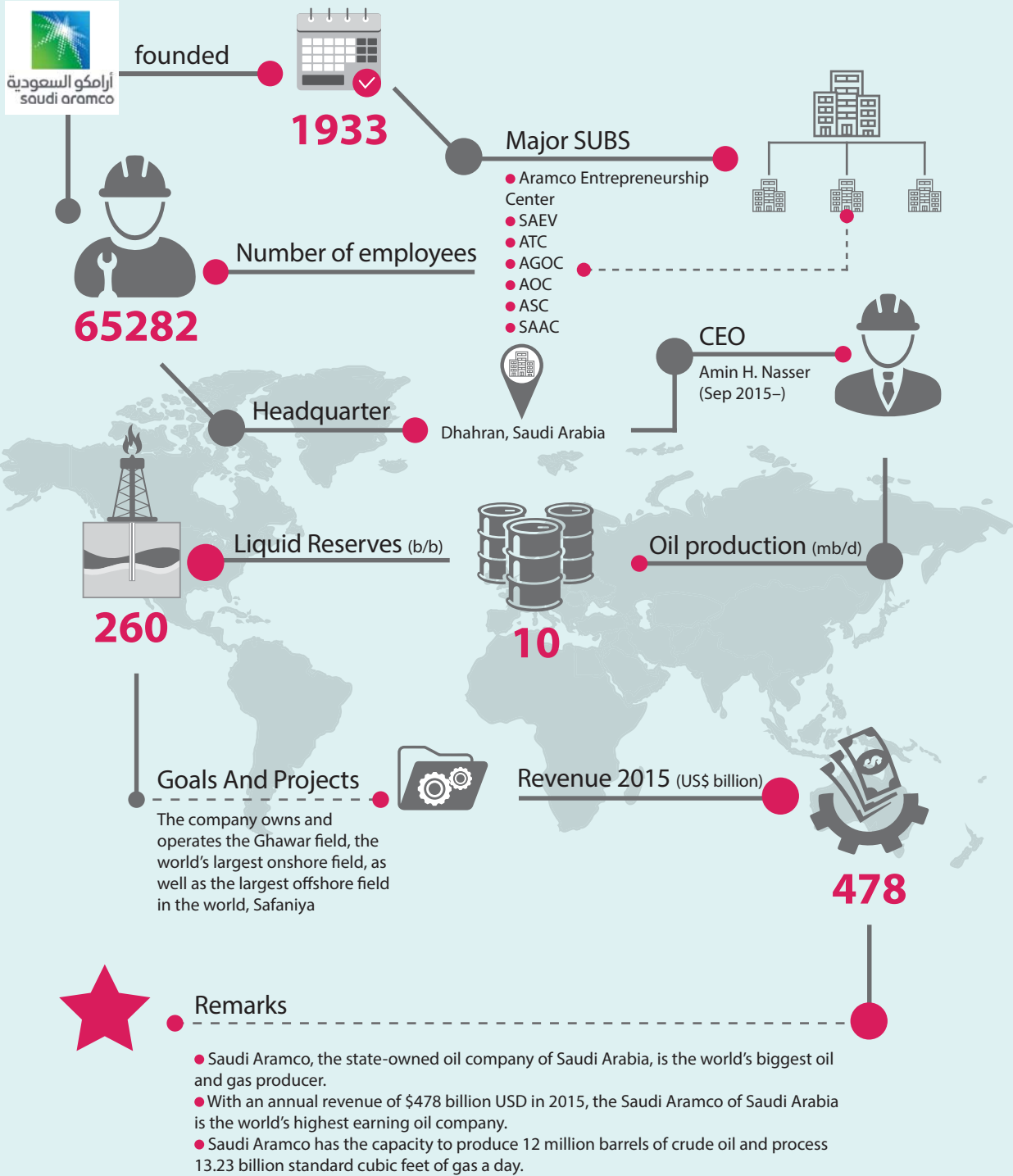
In continuation of the trends, the Regional Focus chapter deals with investigating the status of upstream oil and gas industry in the region. This region encompasses the Middle Eastern countries such as Iran, Qatar, UAE, Saudi Arabia, Kuwait, Oman, Egypt, and Turkey, the Levant countries, including Syria, Lebanon, Jordan, and Palestine, as well as some Central Asian countries such as Turkmenistan, Kazakhstan, Azerbaijan, and Uzbekistan. In the previous issue of the journal, the top drilling companies in the region were studied and thoroughly analyzed from different perspectives, including their fleet statistics, quantity and quality of equipment, manpower, the areas where they operate, and some other points. In the current volume and in continuation of the previous one, the first chapter deals with the national oil companies in the region, including Saudi Aramco, National Iranian Oil Company, Kuwait National Petroleum Corporation, and Qatar Petroleum from different perspectives and in the form of various infographics. Moreover, the second part attempts to analyze meticulously the importance of training professional workforce for the upstream oil and gas industries and the weakness facing the countries in the region in this regard. Accordingly, the institutes responsible for training individuals are divided into various sections, including universities and technical petroleum engineering institutes (particularly drilling training centers). Each of these institutes cover a part of the educational needs of oil and gas upstream industries in these countries. It appears that the expectation that each of these institutes should perform another task is wrong and cannot produce positive results.





An Introduction of Regional NOCs

Saudi ARAMCO



National Iranian Oil Company (NIOC)



founded

1951

Major SUBS

- NISOC
- IOOC
- ICOFC
- NIDC
- NICO
- NITCO



Number of employees

87500

CEO

Ali Kardor



Headquarter

Tehran, Iran



Liquid Reserves (b/b)

158



3.8

Oil production (mb/d)

Goals And Projects

The South Pars field accounts for about 35% of Iran's total natural gas production, whereas Abouzar is its largest offshore oil field. Ah-waz-Asmari, Marun and Gachsaran are the major onshore oil producing fields operated by NIOC.



Revenue 2015 (US\$ billion)

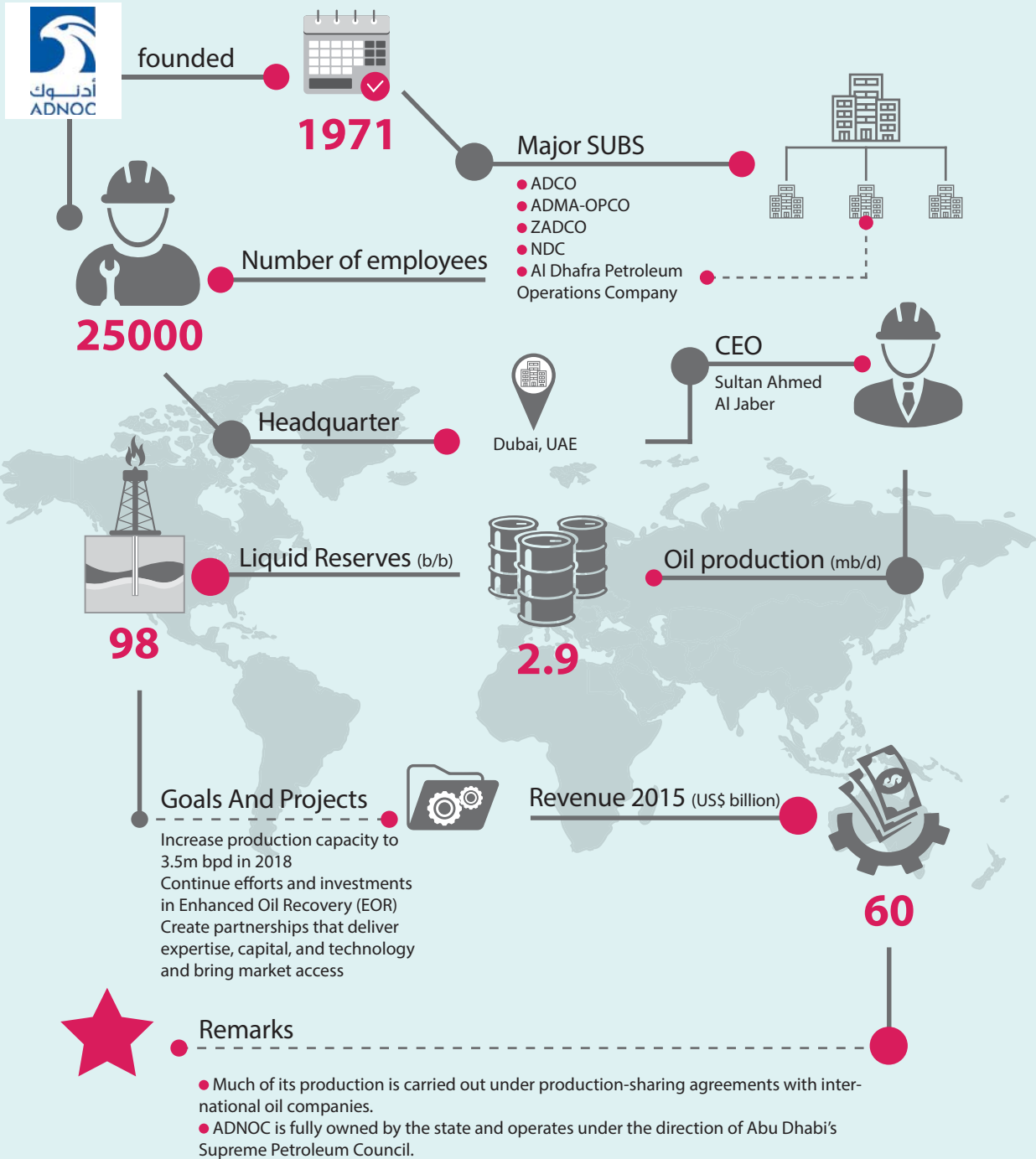
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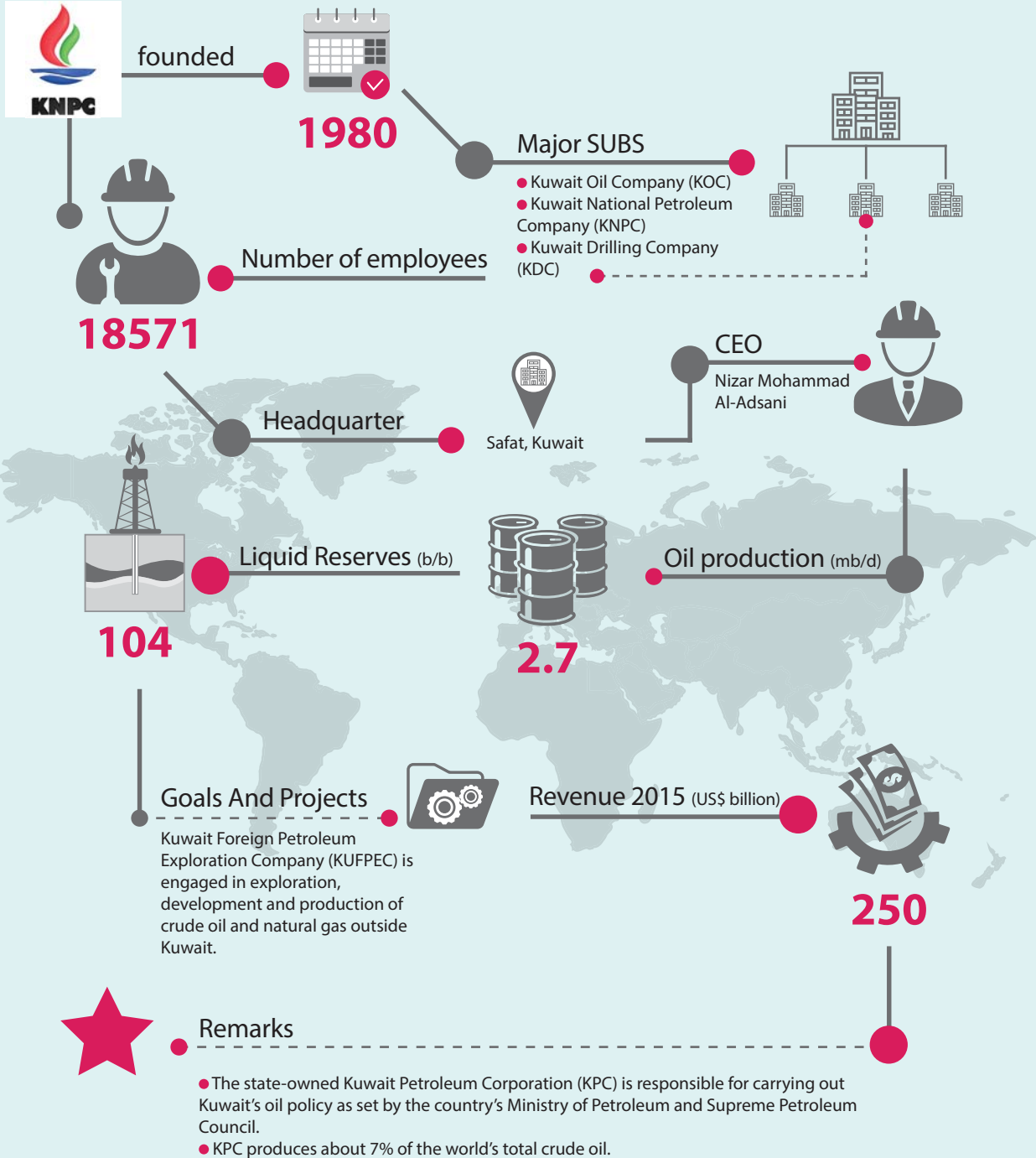
Remarks

- The National Iranian Oil Company is responsible for all upstream operations in the oil and natural gas sectors and all downstream activities in the oil sector in Iran.
- The company is wholly owned by the state and operates under the direction of Iran's Supreme Leadership Council.

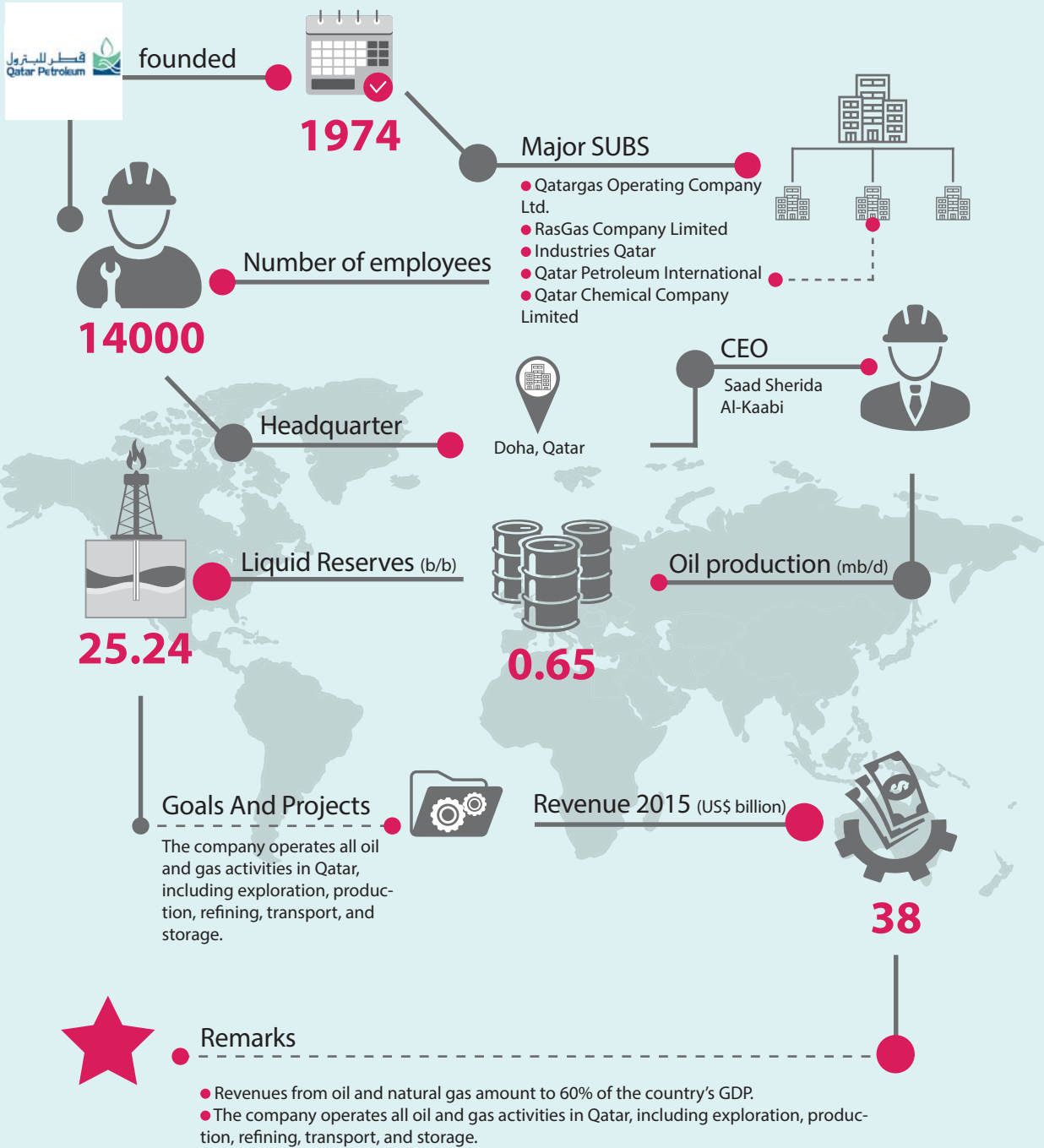
Abu Dhabi National Oil Company (ADNOC)



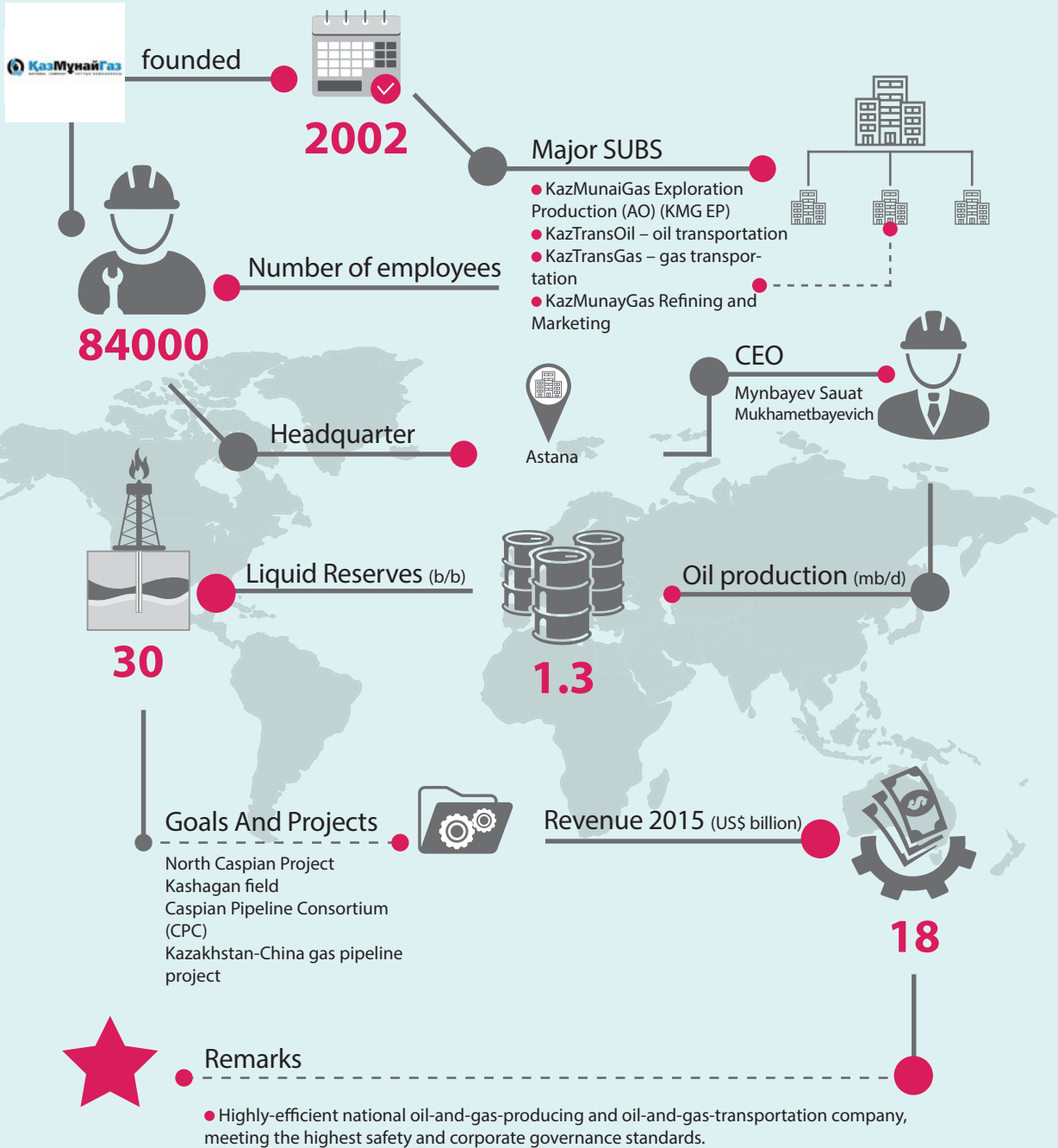
Kuwait National Petroleum Company (KNPC)



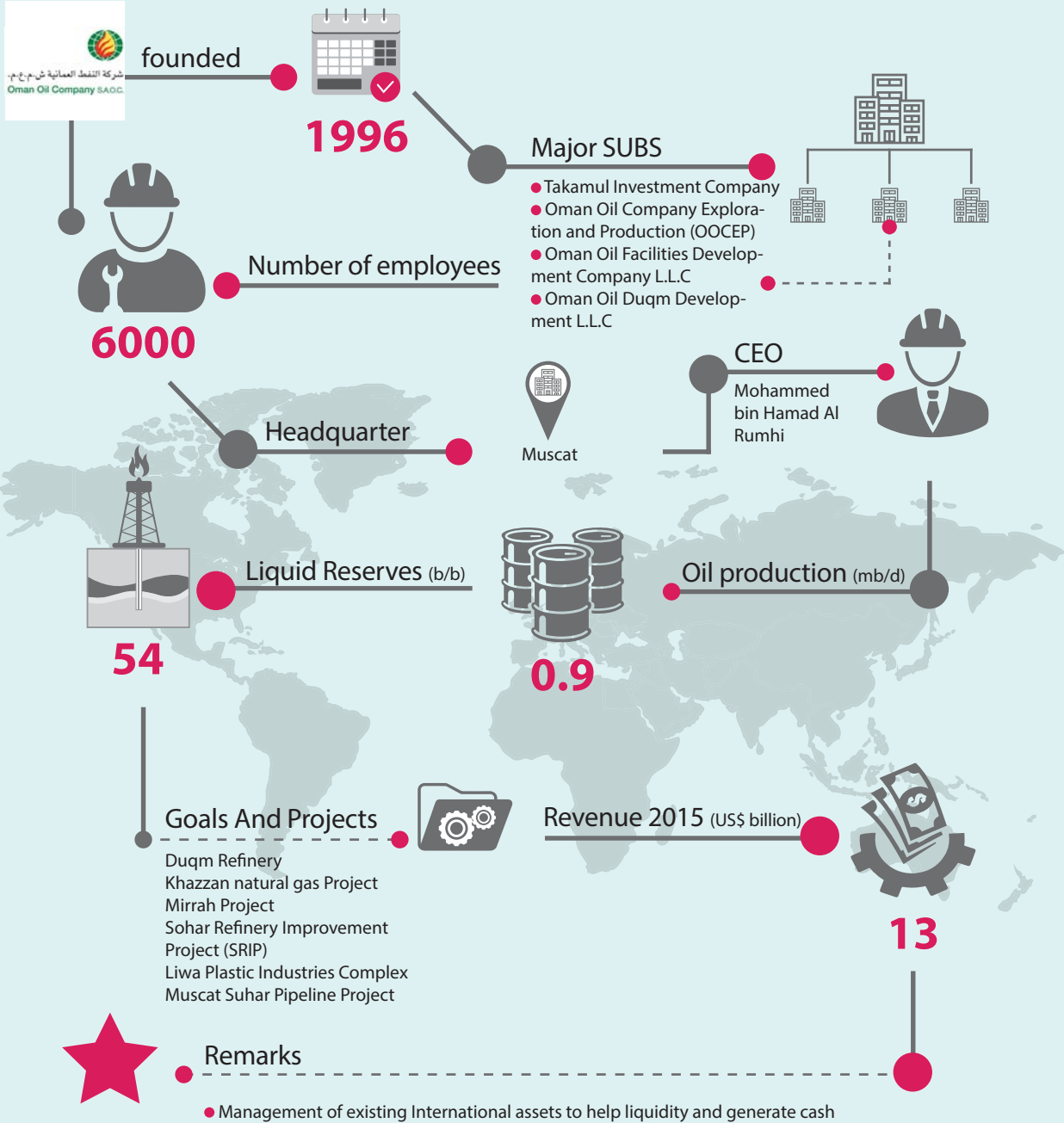
Qatar Petroleum (QP)



KazMunayGas (KMG)



Oman Oil Co. (S.A.O.C)



SOCAR



founded

1992



Number of employees

55000

Major SUBS

- SOCAR Petroleum CJSC
- Baku Shipyard Company
- Socar Polymer LLC
- BOS Shelf LLC
- SOCAR Overseas LLC
- Azerbaijan (ACG) Ltd



CEO

Rovnag Ibrahim Abdullayev



Headquarter



Baku



Liquid Reserves (b/b)

70



Oil production (mb/d)

0.77

Goals And Projects

- SOCAR & Turcas Aegean Refinery
- Southern Gas Corridor
- SOCAR Polymer
- Petkojen



Revenue 2015 (US\$ billion)



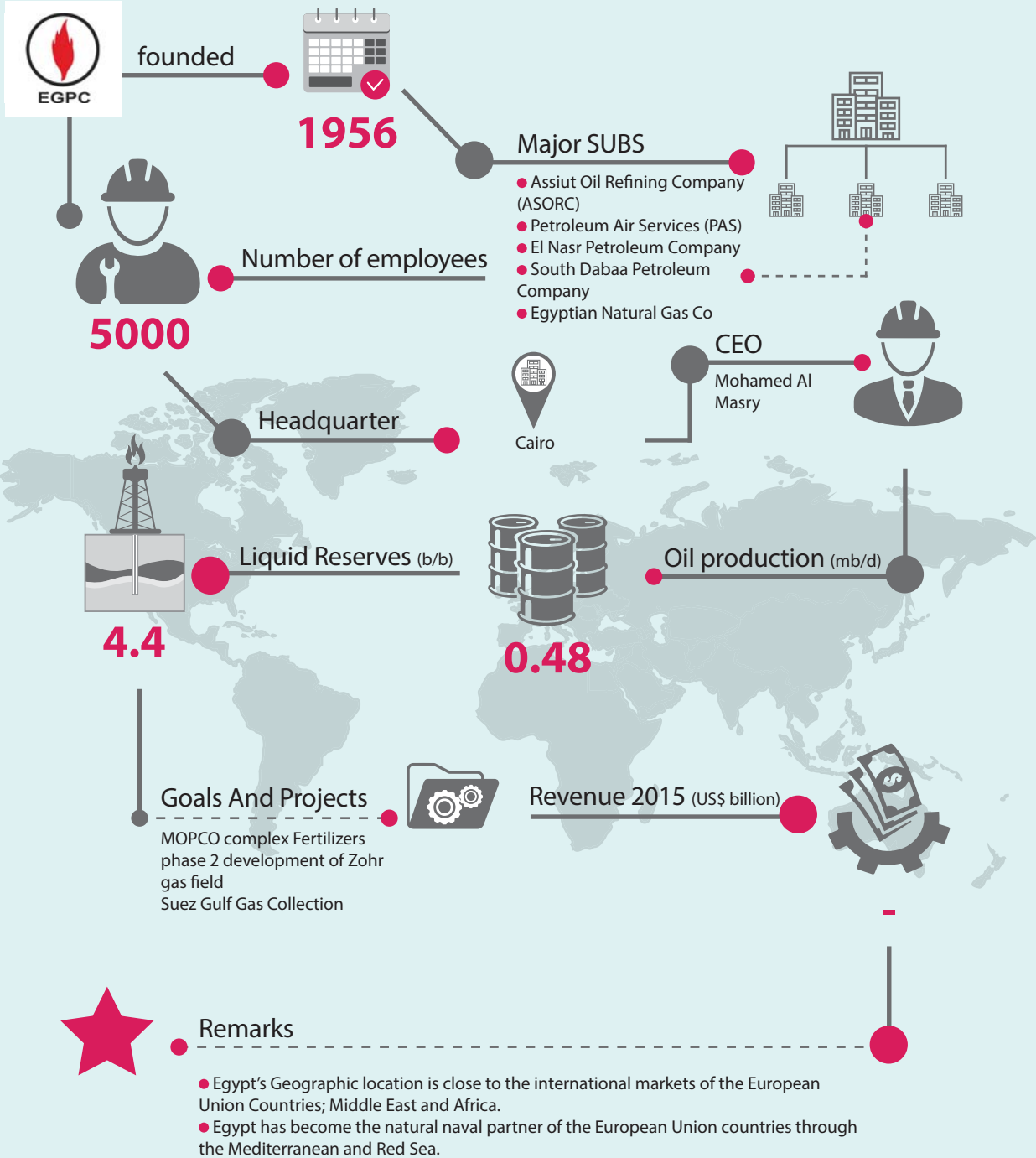
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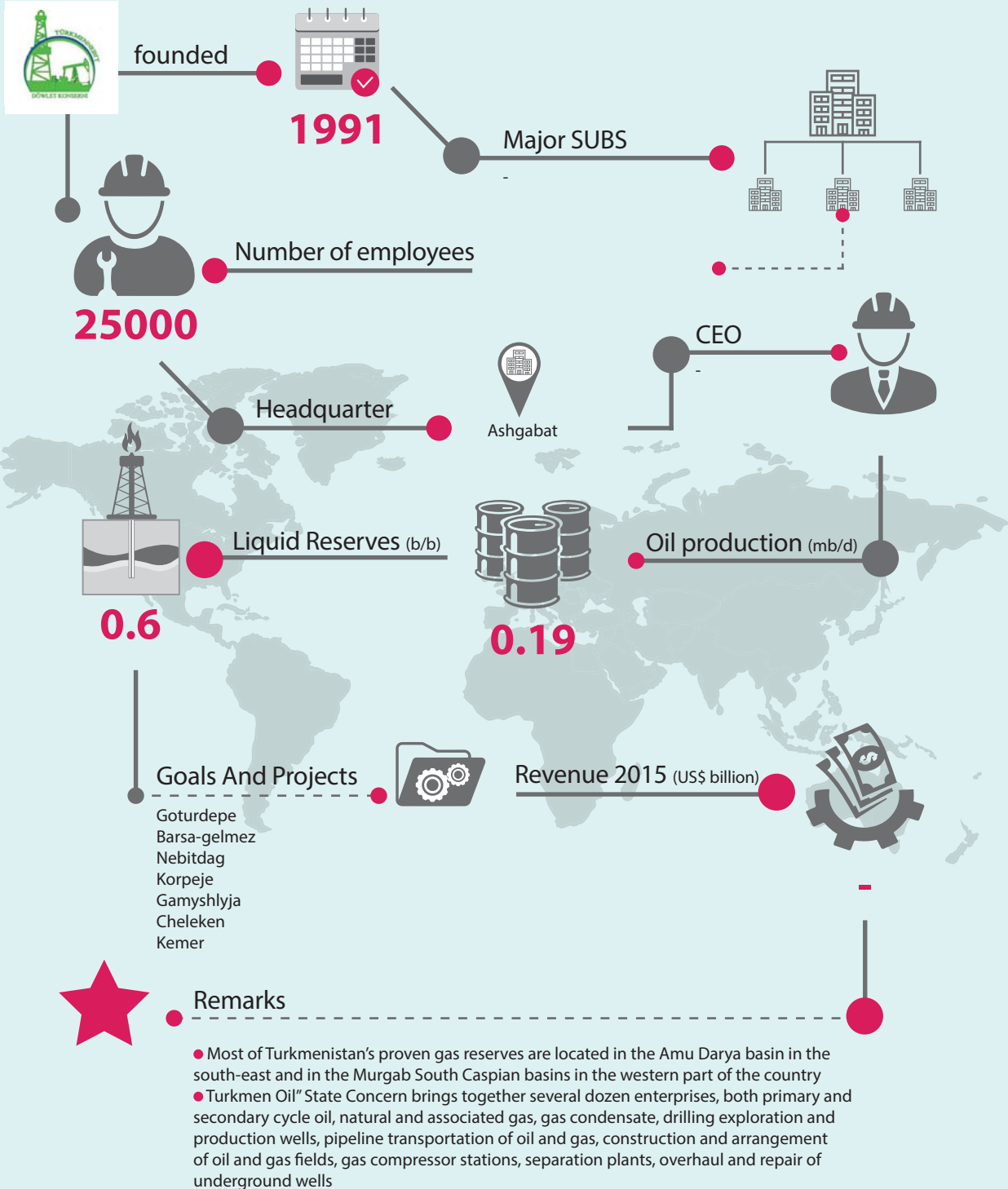
Remarks

- SOCAR has representative offices in Georgia, Turkey, Romania, Switzerland, Iran, Germany and Ukraine
- trading companies in Switzerland, Singapore, Nigeria, and other countries.

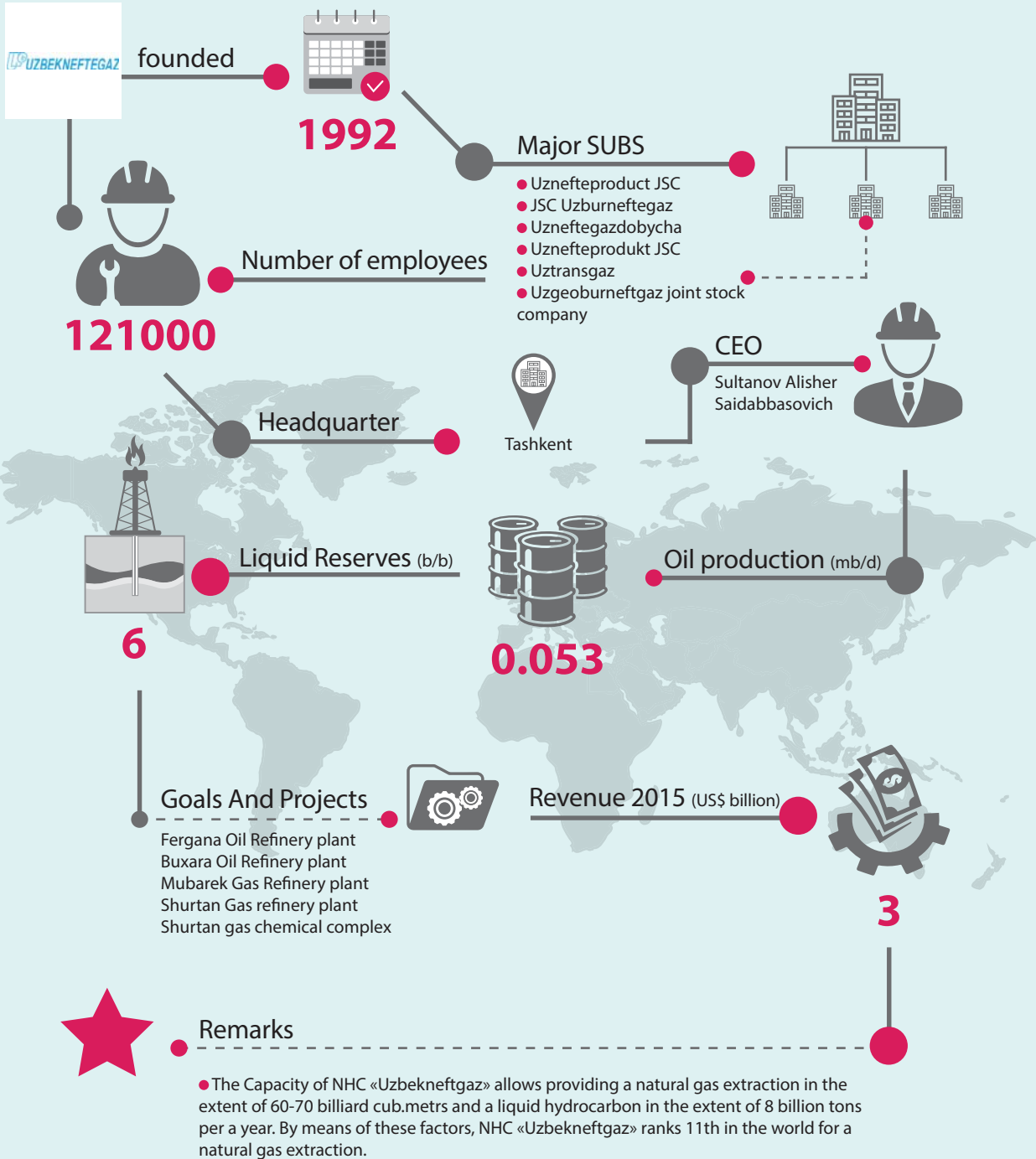
Egyptian General Petroleum Corporation



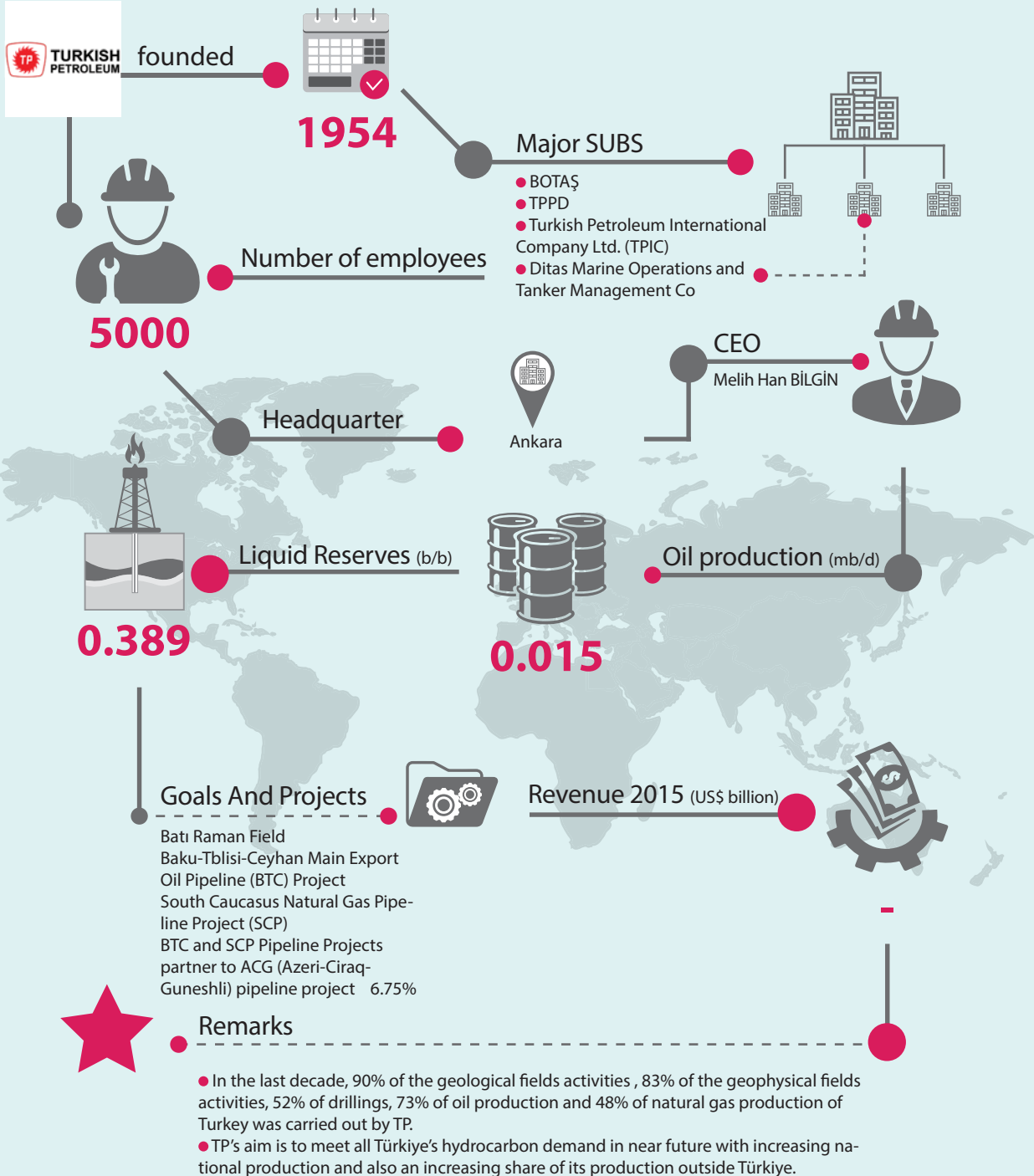
Türkmennebit



Uzbekneftgaz



Turkish Petroleum



Training in Oil and Gas Upstream Industry

Training; a Concern to Notice

Saber Panahi Shokouh
Member of Editorial Board

The issue of training in different industries by considering the new occupational needs in various technical and managerial departments and the presence of expert human resources is of utmost importance. The significance of this issue in the oil industry is multiplied when investigating the statistics of the dependence of many industries on oil and gas. According to a IHS study, at least 32% of the industries in Asia and Europe, 44% in the Central and South America, 40% in the North America, 41% in Africa, and more than 53% in the Middle East are related to oil and gas sector. Therefore, there are a significant number of employees in the oil and gas industry; for example, according to the latest reports in the United States, which is known as one of the most advanced countries in the world with the lowest share of oil and gas in its industries, 2.1 million out of 9.8 million employees are working in the oil and gas industry. Moreover, it is predicted that this number of oil and gas employees will reach to more than 3.9 million by 2025. Indeed, this share of employment is much higher in other countries, especially in the ones with the huge oil reserves in the world. For example, in Saudi Arabia, Iran, Qatar, Iraq, Mexico, UAE, Libya, Nigeria, and Venezuela, more than half of the employees work in the oil and gas industry.

By considering the oil and gas industries in three main sectors of upstream, midstream, and downstream, the present paper attempts to focus on human resources education and training in upstream oil and gas industry. If we take a quick look at different parts of the upstream oil and gas industry from exploration to production, we see a wide range of specialized occupations and activities that play a key role as the first business circles in the oil industry. In the exploration, reservoir, drilling and production sectors of oil resources, employees work at various positions of research, engineering, operations and management. The most considerable difference between the specialized activities in this field is on the engineering and operational sectors, where the oil industry is completely different from other industries.

Before discussing the issue of training the individuals, it is necessary to examine what duties the engineering and operational forces must carry out in the oil industry to make

the necessary arrangements. In general, there are four types of positions in the upstream oil industry, and each needs its own technical expertise. The main task of the exploration sector is identifying and discovering hydrocarbon reserves. The reservoir engineering sector examines the behavior models of reservoirs, plans and designs the drilling and production methods in the fields. In the two branches of drilling engineering and drilling operations, the drilling sector deals with drilling oil and gas wells according to the specified programs. Finally, the exploitation and production sector is involved in managing the production from the wells drilled. The important questions in this regard are as follows: what are the characteristics of scientific and technical knowledge in each of these four major engineering sectors and skillful workforce? What should the engineers, as the most basic oil industry forces, have to do in order to reach professional career positions?

In response to this question, it should be noted that standard and basic steps must be taken to become professional engineers. First and foremost, there must be basic training in petroleum engineering. Academic education is a must in petroleum engineering. Petroleum engineers should have sufficient scientific knowledge and ability in this regard. They must have the minimum academic degree, i.e. B.Sc. in petroleum engineering. Many universities and educational centers provide necessary training for obtaining the degrees. Therefore, it is strongly suggested that

those who want to be good engineers take university courses.

The second prerequisite is the personal qualities appropriate for the oil industry. Having proper characteristics for the oil industry is another prerequisite for the success in this lucrative profession. Engineers and employees in this sector are involved in activities requiring a relatively high amount of physical strength in their daily lives. They must have a strong spirit to work under hard and enduring conditions. Due to the difficulty of working conditions, calculations, and time constraints, petroleum engineers are required to have high intelligence in mathematics to complete projects with the least amount of challenges. Today, these issues play a major role in training good engineers in oil and gas industry. Many employees in this industry, who have not got enough knowledge of working conditions and could not fit in, never succeed in their careers.

The third prerequisite is obtaining qualifications and

at least 32% of the industries in Asia and Europe, 44% in the Central and South America, 40% in the North America, 41% in Africa, and more than 53% in the Middle East are related to oil and gas sector.



certificates required for and related to the organizational positions. Many sectors of the oil industry require professional and industrial certificates. These certificates do not need any prerequisites and can be achieved by attending short-term professional courses and workshops as well as participating in the relevant exams. One of the most prominent features of these courses is the use of successful and practical examples in the industry, resulting from the experiences of individuals and companies. Many professional petroleum associations such as the Society of Petroleum Engineers (SPE) and International Association of Drilling Contractors (IADC) have established training courses for their members that have the above-mentioned certificates. The basis of the requirements defined by these associations is the principles of engineering, particularly the operational discussions and issues based on experiences, for using in the oil industry.

Beside the triple items mentioned before for a petroleum engineer in the technical sector, it is necessary to pay attention to strategic and management issues as well. It is important for oil engineers to know the regular procedures of the oil organizations and companies. Different companies may have their own procedures and tasks; a team working on the contracting sector, a team of employers, a group of consultants, and even companies working on the finance, investment, and other oil sectors including IT, knowledge management, logistics, etc. Therefore, to be a good petroleum engineer it is necessary to work on issues such as learning the economic value of foreign oil resources and influencing the oil industry, working with other sectors of the economic and financial depart-

ments, and experts from other relevant departments in order to explore and exploit the potential of the industry, get familiar with oil production rate strategies, etc. The importance of human resources in all areas of education, retention, and compensation must be considered. However, it is beyond the scope of this paper. What is highlighted in this note is the training of an efficient and expert manpower for the oil industry to operate in each company for a job position, while the organizational issues of oil companies are not addressed. The human resources in the petroleum industry are trained in academic centers such as engineering and technical universities, technical and vocational schools and special training centers for oil industry. Understanding the importance and function of these centers, and their strategies in educational planning is a step towards improving employee's levels. In the following, the universities and specialized educational centers of the world are reviewed in order to study the strategies, goals, capabilities, and the structural lacks of these organizations in the education and training of human resources for the petroleum industry. Also there is important educational advice for universities, industrial training centers and active oil and gas companies in the Middle East region.

Education at University

The University is considered as the main and largest center for theoretical training in the present period. In petroleum engineering, the first stage is to study in the

fields of oil industry at the university. Basic training in oil and gas concepts which can be considered as university strategies, are industry-university requirements in petroleum engineering as well as other related sectors such as mechanical engineering, chemical engineering and so on. In this regard, the capacities of universities and the presence of academic professors in various topics can be used for major scientific developments, new patents

and innovations and the solution of industry problem as most of innovation and industrial mutations are rooted in academic and laboratory activities supported by scientific studies. For sure, the limitations of such centers should be considered and the operational problems of the industry that require operational and industrial experience would not be addressed and the goals must be focused on research topics.

Today, the globally-renowned universities in the field of petroleum engineering have specific educational styles according to their own specific strategies. At universities, there are different engineering courses at different levels that vary in the approaches of learning petroleum

a number of universities have started to improve the knowledge of solving the problems and challenges of the petroleum industry based on their access to the industrial projects and cooperative agreements

engineering. Generally, basic and general principles of oil engineering are taught in B.Sc. degree and research methods are taught in M.Sc. Eventually, research solutions are provided at higher degrees of doctoral and postdoctoral degrees to solve fundamental industrial challenges and problems.

A number of universities have started to improve the knowledge of solving the problems and challenges of the petroleum industry based on their access to the industrial projects and cooperative agreements and now they are working on the research projects using their software and laboratory facilities. We rarely see the presence of the universities as the project developers and implementers and this is according to their establishment basis and application. There is a close and direct connection between the rate of growth and development of the oil industry and the level of countries' universities regarding the presence of capable specialist forces, development of updated technologies and finally the position of the active companies in the country. In the study of more than 50 famous petroleum and gas engineering universities in the world, more than 40% are from U.S, 10% from Canada, 5% from Norway, Australia, U.K(each of them 5%) and only 2 % from other countries such as India, Indonesia, Turkey, Italy, Malaysia, Scotland and UAE. However, there exists only one university with a high international rank in countries such as Denmark, France and Qatar. In the analysis of the world's top universities, it has been understood that the role of laboratory environments along with the necessary abilities to model and simulate the behavior of oil fields and different engineering conditions in the oil industry are so essential in different issues needed by the oil industry. Any university which has these abilities has been able to achieve a higher position in different rankings and also is more used among oil companies in order to solve identified problems. Today, oil companies refer to the universities to solve their technical and engineering problems and this can cause hiring smart capable university students as well as providing scholarships to them and this all result in improving the level of the following universities.

USA					
A&M	Houston	Missouri	Stanford	Victoria	Edwy R. Brown
A&M – Kingsville	Kansas	Montana	Texas tech	West Virginia	Marietta
Austin	Louisiana	New Mexico Tech	Tulsa	Wyoming	Pennsylvania
Colorado	LSU	Oklahoma	UAF	Pittsburg	USC

Table 1 - The Best Petroleum Universities in USA

Australia	Canada	Norway	UK	Malaysia
Adelaide	Alberta	NTNU	Herriot Watt	PETRONAS
Curtin	Calgary	Stavanger	Imperial College	UTM
Western Australia	Dalhousie	UAEU	Nottingham	-
Leoben	NAIT	-	Aberdeen	-
Austin	Regina	-	Robert Gordon	-

India	Indonesia	Turkey	France	Netherland	UAE
Indian School of Mine	FTTM	ITU	IFP	TU Delft	UAEU
Rajiv Gandhi	-	METU	-	-	-

Denmark	Qatar	Hungary	Italy	Japan
DTU	A&M	Miskols	PoliTo	Tokyo

Table 2-3-4- The Best Petroleum Universities in the World

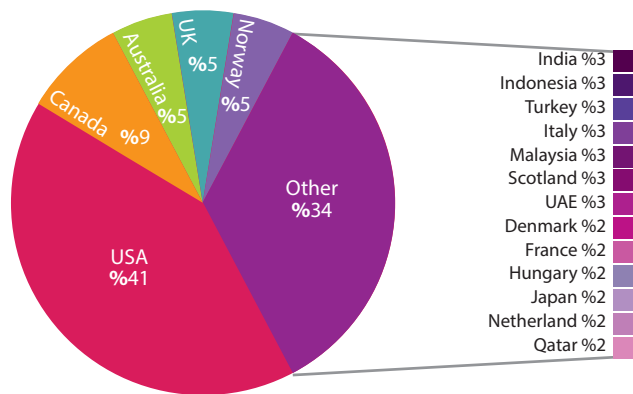


Figure 1- Countries Shares from Best Petroleum Universities

If we look at the Middle East, it is expected to find more acceptable research facilities as the largest oil producing countries in the world are located in this area. However, unfortunately we do not come up with good results by looking at the major regional petroleum engineering universities. Comparing the universities of the Middle East with the world, only few names can be seen and they are in Qatar, UAE and Turkey. In the Middle East, there are a lot of universities, active in the field of petroleum engineering educations. A number of the famous universities are being supported by the governmental/international departments and some others are the branches of the top universities who aim to participate and eliminate project

problems and work on the educational regional issues. Currently, it is required to develop universities in the countries of the region, and there are not enough specific institutes in this field. Some countries have considered effective plans over the past decade. Texas A&M and Herriot Watt universities have set up institutes in Qatar and the UAE. The King Fahd University in Saudi Arabia has improved its position over the past decade by revising its educational principles. The oil and gas industry in Azerbaijan has been able to reach a new stage of its life through the establishment of strong links to the oil industry, and to conduct petroleum engineering trainings. There are also universities in the UAE and Turkey, which are among top 50 universities of the world.

According to the above results, this question comes to mind: "What steps shall be taken in the education of other countries in the region, such as Iran, Iraq, Turkmenistan, Kuwait, Bahrain and etc.? What are their weaknesses and problems? What are the educational problems in developing the oil industry in these countries? What is the difference between countries with the correct planning of education and other countries in the region?"

By studying the development of the upstream oil industry in the region, it is concluded that strong and powerful human resources have been able to improve the situations of producing oil countries in the manufacturing sector. Undoubtedly, the presences of large corporations, financial resources, etc. are also significant, but in countries with no technology, useful human resources are the best and most affordable solution of problems and planning for a powerful industrial future. To promote the level of education and the establishment of great universities in accordance with the procedures mentioned above, the first step is the effort and decision of the top oil industry leaders to create such institutes. Other factors include providing adequate funding, creating processes for attracting students and intelligent human resources to study at petroleum universities and therefore employment in the oil industry by considering special awards and scholarships, establishing the proper mechanisms for connecting universities with industrial centers in order to understand the needs of the industry and identifying academic abilities to apply in projects. It should be noted that if the regional countries do not have proper strategies in their universities, they will have a weakness in the powerful technical forces and should solve this challenge, not permanently but temporarily, at a high and multi-level cost in the near future.

Beside the universities, there should be an international specialized regional center for studies and research that is supported industrially by all countries in the region to

Educating and training researchers experienced in the regional oil fields will be much more effective to develop the ME oil industry.

conduct the projects and problems of mutual fields. Currently, national research institutes are equipped with new laboratory technologies and specialized scientific education ready to become research centers in the region and certainly it will be very effective to create specialized centers in different fields of EOR, drilling, exploration and etc. in the countries of the region with joint cooperation. In the development of the oil industry, all member countries will be very fruitful. However it has rarely been done and poorly in the world due to high costs. While the best situation for this event is in the Middle East due to its specific oil and gas conditions. Major universities of the countries can also be used to become international research centers in the region with specific approaches. Certainly educating and training researchers who are experienced in the regional oil fields will be much more effective to develop the ME oil industry than researchers working in other parts of the world.

CONTRY	UNIVERSITY
United Arab Emirates	The Graduate School at the Petroleum Institute with campus at Abu Dhabi, UAE
United Arab Emirates	United Arab Emirates University
United Arab Emirates	American University of Sharjah
Turkey	Istanbul Technical University
Turkey	Northern Cyprus Campus of Middle East Technical University, Turkey, Ankara
Saudi Arabia	King Fahd University of Petroleum and Minerals (KFUPM)
Saudi Arabia	King Saud University
Saudi Arabia	King Abdulaziz University (KAU)
Qatar	Texas University at Qatar with campus at Qatar, Doha
oman	Sultan Qaboos University
Lebanon	American University of Beirut (AUB)
Jordan	University of Jordan
Jordan	Jordan University of Science and Technology
Iran	Petroleum university of technology
Egypt	American University in Cairo
Egypt	Cairo University
Azerbaijan	Khazar University with campus in Baku, Azerbaijan

Table 5- The Best Petroleum Universities in the Region



Industrial Training Institutes

Secondary needs for training petroleum engineers involve acquisition of specialized training tailored to career and job positions. In this type of training the educational content is developed and the practical solutions are presented to eliminate obstacles and problems at different levels based on the teachings and experiences of the work. Today, vocational training centers which are mostly affiliated with major oil companies and considered to be active oil industrial institutes, provide such training. These centers train technicians with no university grade for industrial occupations and improve the technical capabilities of petroleum engineers for strong presence in operational positions. The training of these centers is aimed at instructing graduated students, creating the technical capabilities of the oil industry and completing the educational chain. The training headings of the industrial training centers are different from those of universities and mostly rely on the operational bases, and are intended to prepare individuals for career progression, and do not have much to do with academic and theoretical discussions.

Educational Headings of Drilling Schools

Most of the industrial training centers are owned by the oil contractors and are operating in countries with major oil projects. Some of the most desirable centers are Aberdeen Training Center, Malaga, Next Schlumberger, and IFP. The nature and strategy of these centers in the oil industry are mostly related to two parts of the petroleum engineering and drilling centers. The centers of pe-

troleum engineering deal with reservoirs, exploration, HSE, project management, etc.; and drilling approach centers deal with technical topics of the drilling section in drilling operations and technical drilling services.

The situation in the Middle East countries to access the educational centers is favorable, and they are permanently active in many countries such as Oman, Qatar, the United Arab Emirates, and Saudi Arabia. In other countries, training courses are held in different seasons by these centers; the rest of the countries must have at least one training center in cooperation with the international centers. The reason for the activity of at least one professional training centers

in each country is to examine and use the specific experiences of each country in different areas that are needed to be addressed in the training.

It should be noted that the establishment of professional schools owned by governments is not necessary for countries, due to the need of these centers for professional training and using of equipment and workshops. While private contractor companies are appropriate for the establishment of professional human resource training centers due to having necessary prerequisites and requirements for this type of training.

Improving HR Quality; a Necessity for the Region

Investigations at universities and educational centers can help in finding valuable points for the development and optimal management of human resources in an organization. As mentioned before, training is considered as the main parameter for determination and enhancement the

Investigations at universities and educational centers can help in finding valuable points for the development and optimal management of human resources in an organization

qualitative level of the employees in an organization that has become more effective than the past as the activities of the oil industry have become specialized.

In this regard, managers and experts of the company should be aware of the nature, goals and advantages of universities and industrial schools in training individuals. Principally, at the universities, theoretical issues related to the knowledge processes in the field of technology creation, inventions and research topics are investigated and most of the efficiency in these centers is obtained by creative and intelligent engineers. On the other hand, the application of operational experiences and project teachings are the basis of designing training courses in the institutes of oil industrial training. Therefore, these institutes mainly train operational technicians and improve the quality of the university graduate engineers to participate in the oil industry operations. Hence, it is better to consider specialized items for each department in the training programs of the staff.

The second point, which is very important, is the plan of universities and industrial education institutes to develop their activities. There is no university in the world that can train specialists for specific activities in the industry solely with the principles and theoretical courses. The main task of the university is to teach concepts and provide scientific research that may also appear in investigating the specific problem-solving of projects. Of course, this process is done in many countries by professional research institutes and providing the necessary hardware and software. Such institutes will help the companies to solve their problems. The institutes of human resource training in the oil industry should also closely associate with active companies in this industry and investigate the challenges and problems of career processes to determine job-related courses, and be able to match the staff of this sector with their jobs in the companies. The more this process be applied and improved in each industrial sector, the easier it will be to train the staff efficiently.

In addition to the existence of universities for studies and research in each country, there is a need to establish an international specialized regional institute that is supported industrially by all the countries in the region which have oil industry. Regarding the common fields, the projects, and dilemmas of many studies are joint. Nowadays, national research institutes are equipped with new laboratory technologies and specialized science education and so they are ready to become research centers in the region. Due to high costs, this has rarely and poorly been ready in the world, and the best condition exists in the Middle East due to its specific oil

and gas situation. The major universities of the countries can also be used to become international research centers in the region with specific approaches.

The last point that the oil industry really needs for the management departments is mastery of managerial concepts. It is necessary for oil universities to utilize other sciences and combine the science of management and oil engineering to define new academic disciplines and prepare the process of financial, economic, and managerial education for oil engineers. Undoubtedly, this part of the training will be the best indicator and innovation in the field of oil education in academia in the future. Since companies need to compete to reduce costs, the principles of professional management, cooperation, business, etc. which requires professional education. Moreover, it seems better if oil engineers who are with a combination of oil and management knowledge become the managers of petroleum organizations.

Eventually, it should be noted that the United Arab Emirates, Qatar, Saudi Arabia, Turkey, and even Oman have a better situation in the terms of education and training among the countries in the region, and this situation also exist in the oil and gas industry of these countries. It is necessary that other countries in the region, such as Iran, Iraq, Azerbaijan, Turkmenistan and Kuwait, improve their situation in this sector due to their dependence on the oil industry as the only domestic competitive factor is the quality of human resources.

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Event Focus

22nd World Petroleum Congress Report

The World Petroleum Congress, known as one of the largest gatherings of the international oil and gas industry, has always been of utmost importance to activists and professionals in this industry. This global event, which includes the two sections of congress and exhibition, is a place for sharing views, expressing policies, and investigating the conditions in different sectors of oil and gas industry worldwide, including downstream, midstream, and upstream. The World Petroleum Congress is organized by the World Petroleum Council (a nonprofit organization) and has been held in various countries. In 2014, the 21st WPC was hosted by Moscow, Russia, and according to the drawing, Istanbul, Turkey was selected as the host of the 22nd WPC. The congress and exhibition was held at Istanbul Congress Center in five days and the most important and largest international oil companies operating in various fields of this industry participated in this event. Major famous companies such as ExxonMobil, Schlumberger, Halliburton, BP, Total, and Russian companies such as Gazprom and Lukoil were present as sponsors in this congress. It should be noted that DrillingMagazine, the only Iranian media sponsor in the World Petroleum Congress, participated in this congress and exhibition along with reputed magazines and journals such as Upstream, Offshore Magazine, and The Wall Street Journal. Considering the importance of this international event and the active presence of Drilling Magazine in this event, we will release a report on what occurred during the five-day congress and exhibition in this international event. Furthermore, we will present the interview with the head of the World Petroleum Council conducted by the editorial board of the journal to the readers.



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22nd WORLD
PETROLEUM
CONGRESS

CHALLENGES
to our
ENERGY
Future





Drilling Magazine Presence in WPC

Exclusive Report of the World's Biggest Petroleum Event

The Opportunities of WPC for Oil and Gas Companies and Actors

International affairs and accordingly foreign investment are two important factors for promoting the status and sustainable development of economy in every society. It is crystal clear that meeting the challenges and realizing this objective requires a lot of preparations and efforts. We, in turn, have taken a step forward by the opportunity provided at the World Petroleum Congress, which you will read in what follows. Drilling Magazine in the process of attending reputable international exhibitions and congresses such as ADIPEC, was the only active Iranian media at the 22nd World Petroleum Congress as the media partner. Attendance at this congress which is one of the greatest oil and gas events in the world, along with the presence of a large number of experts and specialists in the field of

oil and gas industry, was an opportunity to identify new prospects of cooperation with international companies and key actors of oil and gas industry in different fields and from different sectors and build a bridge between the activists in Iran's oil and gas industry and those all over the world. In addition to the Drilling Magazine, reputable journals and magazines such as "Offshore" magazine and "Upstream" and "Turkey Oil and Gas(TOGY)" as well as famous business journals such as the "Wall Street Journal" and the "Business Year" were present at this congress and exhibition as media partners.

Drilling Magazine in the process of attending reputable international exhibitions and congresses such as ADIPEC, was the only active Iranian media at the 22nd World Petroleum Congress as the media partner

World Petroleum Congress; The world Oil Olympics in Turkey

The 22nd WPC with the theme of "A bridge to the future of energy" was hosted by Istanbul, welcoming 50 ministers, 500 policymakers, 500 CEOs, and 5000 representatives from 100 countries, as well as

20000 visitors. This city was competing with Houston, Astana, and Copenhagen to host the congress, finally succeeding for this event in 2017. The organizing of the Congress was the responsibility of the World Petroleum Council which is a non-governmental and nonprofit organization. As the World Petroleum Congress is held once every three years, it is named the World's Oil and Gas Olympics with many representatives from consumer and producer countries attending this global event. The secretariat of the World Petroleum Council is located in London and has 65 member countries, consuming approximately 95% of the world's oil and gas. The 21st edition of the World Petroleum Congress had been held in 2014 in Moscow-Russia, while the 22nd WPC was held in 2017 in Istanbul-Turkey, and the 23rd edition will be held in 2020 in Houston-USA. In addition to President Recep Tayyip Erdogan, Turkey's Prime Minister Binali Yildirim, Turkey's Deputy Prime Minister Numan Kurtulmuş, Turkey's Minister of Energy and Natural Resources Berat Albayrak, Russia's Minister of Energy Alexander Novak, Secretary-General of the OPEC Mohammed Barkindo, Qatar's Minister of Energy & Industry and Energy Mohammed Saleh Al Sada, Algeria's Energy Minister Nouredine Boutarfa, Gabon's Minister of Petroleum and Hydrocarbons Etienne Dieudonné Ngoubou, Venezuelan Oil Minister Eulogio del Pino, and Mexico's Undersecretary of Hydrocarbons Aldo Flores Quiroga participated in this event which lasted for 5 days.

At the opening ceremony of the World Petroleum Congress held at the Istanbul Congress Center, Turkey's Min-

ister of Energy and Natural Resources Berat Albayrak delivered his speech as the first speaker. He said, "At this congress, we will have the opportunity to discuss a lot about the oil and gas sector and the future facilities. Despite the decline in investment in the oil and gas sector in recent years, the importance of this sector will continue in the coming years."

Albayrak also provided important information about the oil and gas sector and investments in this sector and emphasized the fact that "energy demand has been rising rapidly and electricity consumption has tripled over the past 15 years." Albayrak also stated that the country's economy has grown by 5% and that Turkey has been among the leaders of the Organization of Development and Cooperation Organization (OECD).

Furthermore, during the opening ceremony, Rex Tillerson, the US Secretary of State, received the International Petroleum Congress Award several months after leaving his previous post as CEO of ExxonMobil for membership in Donald Trump's cabinet. Rex Tillerson had been the Chief Executive Officer of ExxonMobil since 2006. ExxonMobil was selected as the sixth largest company in the world in terms of turnover under Tillerson's time in office. On December 31, 2016, he resigned from managing the company and was replaced by Drain Woods.

The trend followed at the 22nd World Petroleum Congress confirmed that governments, the energy industry, researchers, and communities should cooperate with each other.

World Energy Market under Experts Watchful Eyes

In the course of this congress, in 5 days, the impacts of energy developments, in particular oil and gas, on the needs





of the global energy community, economy, politics, and society, as well as technical topics such as exploration and production of oil and gas, refining, transit, gas processing, and other issues related to the oil and gas industry were investigated. The decline in oil prices in world markets as well as the decision made by oil-exporting countries to reduce oil production were the main issues on the agenda of the congress. OPEC announced last January that it would reduce its oil production. However, given that the restrictions on oil production in the first half of the year did not reduce oil reserves as expected, OPEC extended its decision to reduce oil production. These measures, which are aimed at preventing an increase in supply vs. demand, are expected to improve the oil market. In this trend, OPEC has reduced its oil production, while US shale oil production has increased. This topic was one of the topics on the agenda of the oil congress. An increase in shale oil production by the United States will increase the supply of oil in global markets. This situation will also lead to a more significant decline in the price of oil.

Although the decrease in oil prices is unfavorable from the oil-producing countries' point of view, its effects are positively evaluated on the economy of countries such as Turkey providing the majority of their energy needs from the world market. Turkey is one of the world's largest purchasers of energy, and this urgent need for energy and purchasing it from foreign countries has led to Turkey's regular trade deficit. If the energy price continues to decline over the coming years, the trade deficit in Turkey will be greatly reduced, exerting an extremely positive influence on the economy of this country. During the 22nd World Petroleum Congress held in Istanbul, Turkey established very important dialogues and negotiations concerning all of these goals and projects. In this framework, all the steps and measures taken will be very effective in making Turkey a center of energy in the region and will further strengthen Turkey's position in the region.

Interaction and cooperation are the only effective ways in the energy market

The trend followed at the 22nd World Petroleum Congress confirmed that governments, the energy industry, researchers, and communities should cooperate with each other. Partnerships, innovative actions, and creative solutions form the basis of this cooperation by supporting global energy efficiency policies. The 22nd World Petroleum Congress has gathered leaders of the world's energy industry and is the place to discuss current issues, advances, and solutions to the future sustainable energy.

Iranians at the Exhibition and Congress Sessions of WPC

By establishing a 280-meter common booth with the National Iranian Gas Company in the vicinity of companies such as BP, Total, and the Turkish Petroleum, the National Iranian Oil Company had a strong presence in this great global energy gathering. In addition to attending the exhibition, the National Iranian Oil Company actively participated in research departments by presenting 23 scientific articles.

The 22nd World Petroleum Congress was a significant opportunity for mutual interactions in the post-JCPOA period, which undoubtedly strengthened the presence of the National Iranian Oil Company. The Iranian experts attended the meetings of the congress, where the ministers and senior directors of the member and non-member countries of the World Petroleum Council and the managers of the international companies were present and discussed and exchanged information about the future of energy, policies, and plans for the world's major oil companies, and the future path of the oil trade. Beside the Iranian Ministerial session which was highly attended by the participants of the congress, due

the fact that great companies, press and governments wanted to know that what the Iranian policies in oil and gas industry would be in the post-JCPOA period and after that the international sanction were lifted, some of great and famous Iranian oil and gas actors such as Dr. Seyed Mohammad Hossein Adeli, Secretary General of Gas Exporting Countries Forum, Dr. Amir Hossein Zamaninia, Deputy Minister of Petroleum were invited to the congress and had speeches in the different sessions such as plenary sessions or forums.

A Turning Point in the 22nd World Petroleum Congress

The turning point of this congress was signing the "Turk Stream" gas pipeline agreement. The intergovernmental agreement on the transfer of Russia's gas from Turkey to Europe was signed in Istanbul after about 2 years of negotiations. The Turk Stream Project was first commissioned on May 25, 2014 by Russian President Vladimir Putin who said that "with this project, we will transfer the South Stream from a country that is not a member of the European Union." This contract was finally signed by Turkey's Minister of Energy and Natural Resources Berat Albayrak and his Russian counterpart Alexander Novak.

Closing Ceremony of the 22nd World Petroleum Congress

The World Petroleum Congress closed at the Istanbul

The next time, the congress which would be the 23rd will be held in Huston, United States of America. It comes after two unsuccessful attempts by Houston to secure the triennial World Petroleum Congress in 2017 and 2014.

Congress Center in Turkey after the presentation and farewell meeting of Maria José Nadu and Yonghun David Kim, the old and new chairmen of the council. At this ceremony, Maria José Nadu pointed out that despite all of the ambiguities, a better world can be achieved by making endless efforts. She also appreciated the Turkish government and the Minister of Energy and Natural Resources, Berat Albayrak, for hosting and holding this congress successfully.

The Last and the Next WPCs; Next One Houston, USA

To talk about the last and next World petroleum congress, we should say that Russia hosted the 21st World Petroleum Congress in 2014 in Moscow, and the next time, the congress which would be the 23rd will be held in Huston, United States of America. It comes after two unsuccessful attempts by Houston to secure the triennial World Petroleum Congress in 2017 and 2014. The congress is expected to draw about 10,000 top level oil executives from across the world. The economic impact is estimated to range between \$60 million and 80 million.

This will be the third time the World Petroleum Congress takes place in the United States, and the second time in Houston.

The city will take the net profit of the event to establish a global program to benefit the next generation of energy professionals.





Iranian Presence in the World Showcase:

There is No Restriction for Iran to Hold a WPC-Congress

With years of experience of holding great events in the field of oil and gas industry, World Petroleum Council have been gathering key actors of this industry by its different exhibitions and congresses from all around the world. Due to the important role of this non-profit organization in making opportunities for oil and gas people to meet each other and talk about the last opportunities and policies of the great actors of the industry, we had a friendly talk with Dr. József TOTH, the World Petroleum Council President.

? As the first question, I want to ask you about the infrastructures for holding the WPC. How do you see this 22 WPC being held in turkey? How is your idea about this?

The council is based on the membership on the national committees. International committee decides to try to organize congress like in the Olympic movement and the country has to apply rights to organize such a congress. Turkey tried three times; the third time succeeded to get the congress so in a time frame of 20 years became the congress organized. So it means that the initiative comes from the national committees and the council is an assembly of national committees decides about that. It is a system working since 1933. WPC is not a profit organization; a United Kingdom based charity organization, non-political, professional, and also accredited to United Nations. So this organization is well known for our members.

? What are the important factors to be chosen for a country as a WPC organizer or holder?

Well, basically there are several elements, there is the

contract has to be accepted, royalty for the congress which has to be paid according to the contract, there must be suitable facilities for accommodating on one hand the congress itself. On the other hand exhibition because the congress goes over with exhibition. And the third thing must be capability to organize such a big event and facilities. Hotels, so on should be available. So it has got very strict criteria but it has to think of accommodating one time for five days or plus five days. 20,000 people. It takes three years to organize.

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? About the speakers, panel speakers, what is the standard procedure for WPC to choose someone as a speaker?

There are two categories of speakers, one the most if the speakers who are technical can be not only technical, financial, or other type of environmental issues. These types of speakers are elected in a complex? By partly by the congress program committee determines the theme three years ahead you can imagine how many very wise knowledgeable people need to be decided about what kind of topics will be actual When it is determined the first

thing is that there will be selection of for room chairs and wise chairs, very important persons, by companies, academies worldwide who knowledgeable about the topic who know about the topic, understand so they have got their own responsibilities then then the core for the extract then for individual box and for rooms will be many papers sometimes in a info room can come 150 papers only 4 can be presented so it means the quality is number one issue in our case that quality must be the highest top level presenters so responsibility of the chair is so important. Chair and wise chairs very knowledgeable persons who then select these papers which give the best answer to certain issues. So this is one way of selection other is for example for plenaries by invitation this is for CEOs and chairman of the companies or ministers depending on the actual topic. So these are the two ways of how to invite and how to get 700 speakers. So it needs time, considerations. We need to follow changes and what's going on in the leadership of individual companies. So this is my answer.

? About the companies that are participating in this congress, we see that drilling companies are not likely to participate in this, but the oil majors IOCs

Iran is a great and a hydrocarbon-rich country. So everything is ok and there is no restriction for Iran to be a candidate to hold a WPC-Congress.

like total everything they are all in. What is the reason about drilling companies? They're not invited or not participating or is there any other reason.

This is open to everybody. So there are no limitations. They just pay the registration fee and they come. Like any other conference or this is up to them to decide or they approach they make the networking because among the drilling companies illegible. They can come. It's up to them to decide.

? What do you think about Iran? Do you think that Iran can hold a meeting of WPC for next years?

Iran is a very important member of WPC. Since we are none-political organization we are the same to every member. Yes, it depends on the accessibility to the congress, if there is some problem to travel to the country from then of course we need to consider this what is best for the industry we don't want to conflict. Because our rule is to secure platforms widest range of experts and decision makers can discuss. So I have personally been in Iran for many times. Maybe 20 or 30 times. Iran is a great and a hydrocarbon-rich country. So everything is ok and there is no restriction for Iran to be a candidate to hold a WPC-Congress.





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