

Third Quarter 2014

Energy Outlook



***China's Quiet Return to the
Middle East End of Silk Road***



VITOL IS A GLOBAL ENERGY AND COMMODITIES COMPANY.

Every day, we deliver energy solutions to clients around the world.

Over 5 million barrels per day of crude and products traded each year.

200 ships at sea at any one time.

2.7 million barrels per day of crude oil & feedstocks supplied to refiners.

350,000 barrels per day of refining capacity in Europe, Middle East and Australia.

11 million m³ of storage capacity located across five continents.

2,270 marketing outlets in Africa, Australia, and Europe.

Vitol. Delivering quality. Every time. On time.
To find out more, visit www.vitol.com



- 03 Foreword**
- 04 One Man's West Asia, is Another Man's Middle East and Africa - A New Era of Engagement**
Gulf Intelligence
- 13 China's Engagement with Africa, Deflecting Criticism of 'Neo-Colonial' Posture**
Q&A with China's Premier Li Keqiang
- 19 Water Crisis: Think Global, Act Local**
Sean Evers, Managing Partner, Gulf Intelligence
- 23 UAE Energy Infrastructure: Integrating New with the Old**
Ali Al Jarwan, CEO, ADMA-OPCO
- 27 Facilitating Collaborative Technology Development & Deployment**
- 34 Delivering Energy Security through Energy Efficiency**
Dyala Sabbagh, Partner, Gulf Intelligence
- 40 The Changing Global Energy Map Affects Demand and Investment**
Maria van der Hoeven, Executive Director, IEA
- 44 ISIS Could be Catalyst to Bring Saudi and Iran Closer Together**
Raghida Dergham, Al Hayat Newspaper

To contact Gulf Intelligence call +971 4 4508980 or visit www.thegulfintelligence.com

2014 Gulf Intelligence. All Rights reserved. No part of this publication may be reproduced without the written permission of Gulf Intelligence

GULF INTELLIGENCE
We Facilitate Knowledge Exchange



The Gulf Intelligence Middle East Forum Season 2014-2015

"A dynamic exchange of knowledge with an enhanced networking experience"

□ The Gulf Intelligence Energy Markets Forum

Under the Patronage of His Highness Sheikh Hamad bin Mohammed Al Sharqi, The Ruler of Fujairah

Partners: The Port of Fujairah, Vitol, Platts
Fujairah, Sept. 23rd 2014

□ The Gulf Intelligence Oman Energy Forum

Partners: Oman Oil Company, Petroleum Development Oman, BP, Oman Trading International, Occidental Petroleum, Shell Development Oman, Daleel Petroleum

Muscat, Oct. 21st 2014

□ The Gulf Intelligence UAE Energy Forum

Under the Patronage of H.E. Suhail Mohammed Al Mazrouei, Minister of Energy, UAE

Partners: Maersk Oil, Occidental Petroleum, OMV
Abu Dhabi, Jan. 13th 2015

□ The Gulf Intelligence Doha Energy Forum and Women in Energy Summit

Under the Patronage of H.E. Dr. Mohammed Saleh Al-Sada, Minister of Energy & Industry Affairs, Qatar

Partners: ExxonMobil Qatar, Maersk Oil Qatar, ConocoPhillips, Dolphin Energy, Occidental Petroleum of Qatar Ltd.

Doha, March 10th & 11th 2015

□ The Gulf Intelligence Qatar Energy R&D Forum

Under the Patronage of Qatar University

Partners: ExxonMobil Qatar, Qatar Shell, Total, Oryx GTL, Maersk Oil Qatar

Doha, April 28th 2015

□ The Abdullah Bin Hamad Al-Attiyah International Energy Awards

Under the Patronage of The Abdullah Bin Hamad Al-Attiyah Foundation

Partners: Total, Dolphin Energy
Doha, May 5th 2015

Thegulfintelligence.com



A grim summer and a mildly-mannered oil market

IN MANY WAYS, it has been a grim summer – and I am not talking about the weather. The West and Russia have increasingly found themselves at loggerheads over Ukraine, where fighting in its eastern region continues unabatedly between government troops and pro-Russian separatists. With little progress made towards resolving the crisis, Europe and Russia have entered into a tit-for-tat sanctions war, whose outcome is hard to predict. For Europe, the situation is particularly threatening given its dependence on Russian gas supplies being piped through Ukraine.

Meanwhile, in Syria and Iraq, the Islamic State has taken control of vast areas in both countries and announced the birth of a caliphate that's built on sheer terror and oppression. The group is already controlling essential resources, including oil fields and wheat supplies. And even though the US has decided to intervene militarily, carrying out air strikes on Islamic State positions, the threat is far from over. The militant group remains dangerously close to hydrocarbon-rich Kurdish territories and could potentially threaten other key energy infrastructure in Iraq, including the strategic Kirkuk-Ceyhan oil pipeline.

Add to this mix the ongoing instability in other key energy producing countries such as OPEC members Libya and Nigeria, and one would be forgiven to expect oil markets to be more than a little jittery, if not outright panicked. Surprisingly, the market reaction has been rather mild mannered. West Texas crude hit nearly \$108 a barrel in mid-June, breaking out of its three-month old \$99-\$105 trading range, but prices have since come down to below the \$100-a-barrel mark.

The reason? A great deal of supply in the markets, partly due to rising US output and Saudi Arabia pumping at close to 10 million barrels a day. At the same time, demand remains subdued, with the Paris-based International Energy Agency in mid-August cutting its oil-demand forecast for 2014 by 180,000 barrels a day due to weaker economic growth. Going forward, the supply side is set to receive another boost with Canada, Mexico, Brazil and Kazakhstan all set to see significant production growth, while the demand outlook remains somewhat uncertain amid sluggish global economic conditions.

With this in mind, one thing is for certain: the energy industry will have to plan for all eventualities – and hope that this winter will be more pleasant than the summer.

Sean Evers

Managing Partner, Gulf Intelligence

One Man's West Asia, is Another
Man's Middle East and Africa –
A New Era of Engagement

Gulf Intelligence



ENERGY

CHINA HAS stepped up its engagement in the Middle East and East Africa over the last decade as the Asian giant seeks to safeguard and diversify crucial energy and commodities supplies needed to sustain long-term economic growth and open up new markets for Chinese companies' expanding product and services portfolios. From buying a major equity stake in a frontier gas project in Mozambique from Eni, to developing some of the world's biggest oil fields in Iraq, to constructing a large-scale refinery at Saudi Arabia's Red Sea coast, Chinese companies are broadening their footprint across the region, channeling billions of dollars into key sectors such as energy, infrastructure and manufacturing.

A political backlash in 2005 against Chinese efforts to acquire U.S.-based Unocal for \$18.5 billion may have encouraged Chinese firms to look more acutely at the opportunities in the Middle East and Africa, and tread more carefully in the West as they target foreign assets.

The energy needs of China and the Middle East-East Africa region are closely intertwined, and Beijing's greater engagement in the resource-rich area is set to have a lasting impact. On an industry level, it paves the way for a new breed of Chinese energy companies—characterized no longer by low-cost and sub-standard quality and service offerings, but by considerably upgraded technological, human and financial capabilities—to play a much greater role in a sector that in the past was almost exclusively dominated by Western firms, in particular international oil companies (IOCs).

On a political level, China's deepening engagement in the Middle East and East Africa provides the world's second-largest economy with long-term access to strategic hydrocarbons and other raw materials, while at the same time opening up downstream opportunities for producing countries seeking to cement relationships with their customers and ensure long-term demand security. It is also strengthening bilateral relations between regional governments and China, helped by Beijing's strict policy of non-interference in other countries' internal affairs, thus adding a new strategic dimension to the region's political dynamics that may have greater weighting in the aftermath of the Arab Spring.

However, it is important to note that China's NOCs are not merely puppets of the Chinese party-state that are expanding internationally for the sole purpose of assuaging Beijing's

concerns about energy security, but equally it is important to recognize that state financial support probably does provide China's NOCs with a competitive advantage over other oil companies and may play a larger role in the wake of the financial crisis.

COMPETITIVE POSTURE

China's increasingly competitive posture in the region's energy sector was highlighted most recently by the April announcement that state-owned China National Petroleum Corporation (CNPC) had agreed a landmark deal with Abu Dhabi's government granting it access to produce and export crude oil from several onshore and offshore fields in the emirate. The deal, the first of its kind for a Chinese company in the Gulf state, comes amid reports that ExxonMobil has reportedly not bid for the renewal of Abu Dhabi's historic onshore concession, and follows the September signing of a \$2-billion contract by China National Offshore Oil Corporation (CNOOC), also state owned, with Uganda to develop the Kingfisher oil field with 635 million barrels of estimated reserves in place.

In May, China signed another deal in East Africa for the construction of a \$3.8 billion rail link between Kenya's Indian Ocean port of Mombasa and Nairobi, the first stage of a line that will eventually link Uganda, Rwanda, Burundi and South Sudan. Exim Bank of

FIGURE 1 ENERGY CONSUMPTION IN THE UNITED STATES, CHINA AND INDIA, 1990-2040

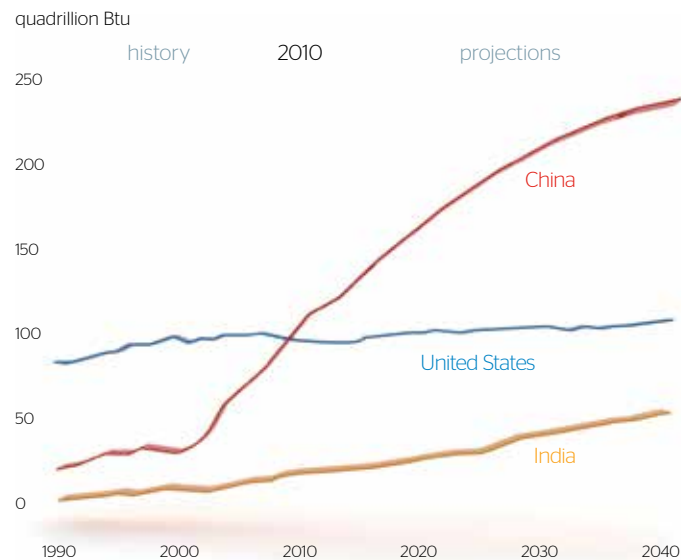
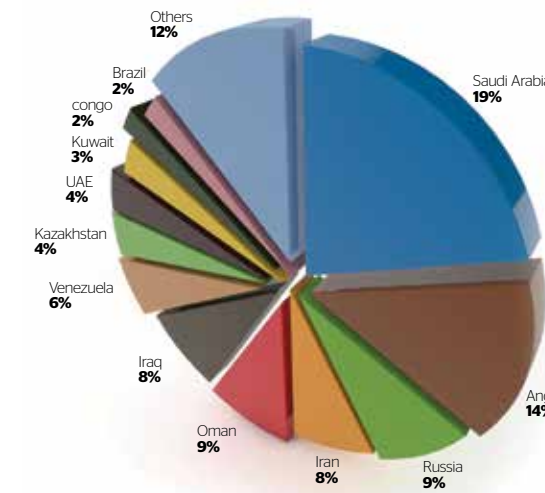


FIGURE 2 CHINA'S CRUDE OIL IMPORTS BY SOURCE, 2013



Source: FACTS Global Energy, Global Trade Information Services.

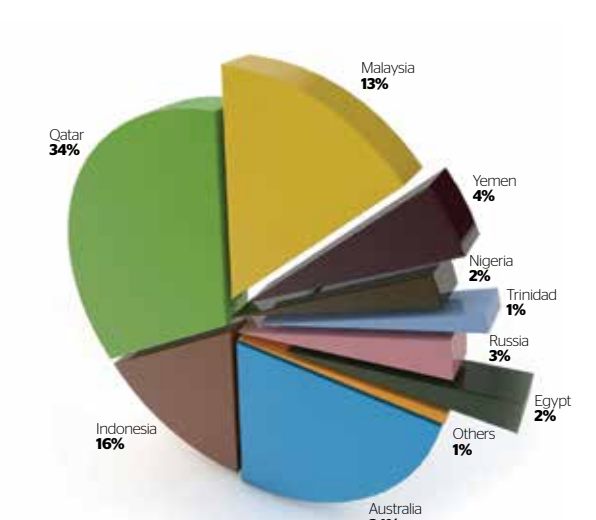
China will provide 90 percent of the cost to replace the crumbling British colonial-era line.

The deals highlight China's new pivot to the existing and emerging energy-producing regions of the Middle East and East Africa. As the world's most populous nation embarks on a global strategy to ensure security and reliability of its internationally-sourced energy and raw material supplies, the oil, gas and commodity sectors have become the most critical aspect to China's relationship with the Middle East and large parts of Africa.

"China is not only a large importer of oil, but also of other raw materials. Whether it is tin, copper or lead, China's share in global consumption and production hovers between 30 and 45 percent. It is also a large producer of alumina and steel, and accordingly imports bauxite/alumina and iron ore," said Eckart Woertz, Senior Research Fellow at the Barcelona Center for International Affairs.

The trend won't end any time soon. On the contrary: China, which in September became the world's largest net importer of crude oil and other liquids, is projected by the U.S. Energy Information Administration (EIA) to consume more than twice as much energy as the U.S. and more than three times as much as India by 2040*. It is driven by a mix of steady economic growth and rapidly rising petroleum demand that outpaces production growth in the Asian country, whose population will rise to about 1.38 billion by 2015 from an estimated 1.34 billion in 2010.

FIGURE 3 CHINA LNG IMPORT SOURCES, 2012



Source: FACTS Global Energy, Others: Oman, Algeria.

CHINA'S DEMAND FOR OIL & GAS APPEARS INSATIABLE

And while total annual petroleum and other liquids production in the U.S. is expected to rise 31% between 2011 and 2014 to 13.3 million barrels per day (bpd) on the back of North America's shale revolution, China's production is forecast to reach only a third of U.S. production by the end of this year**.

With energy demand on a steep upward trajectory, China began pursuing a strategy of diversifying its sources of crude oil and natural gas imports more aggressively over the past decade. The Middle East and Africa (MEA) have played an integral role in these plans and the MEA region accounted for more than two-thirds of China's total crude oil imports in 2013. Oil from the Middle East alone accounted for at least 51 percent of all imports in the same year, EIA data show***.

Saudi Arabia, the Middle East's biggest economy, has been—and remains—the largest supplier of crude oil to China, accounting for 19 percent of China's 5.6 million bpd imports last year, according to the EIA. Because oil production in Iran, Libya, Sudan and South Sudan—some of Beijing's traditional suppliers—substantially declined since 2011 due to regional instability and sanctions, China replaced the lost volumes of oil and other liquids imports with higher shares from the MEA region, notably Oman, Iraq, the United Arab Emirates and Angola, as well as from Venezuela and Russia.

* See Figure 1
 ** See: <http://www.eia.gov/todayinenergy/detail.cfm?id=15531>
 *** See Figure 2

According to Edinburgh-based energy consultancy Wood Mackenzie, China's thirst for energy means that the country will have to spend as much as \$500 billion per year by 2020 on crude oil imports alone*.

"The price China pays will far outstrip the peak cost ever incurred by the U.S. of \$335 billion, with U.S. import spend falling to only \$160 billion by 2020. This demonstrates the growth of the Chinese market and reliance on oil imports in relation to the U.S., whose import requirements have already and will continue to decrease due to a previous weakening in oil demand and growing domestic supply. The opposing trends in crude oil imports will affect the cost to both countries and inter-regional trade flows," the consultancy firm said in a report published last August.

While oil accounts for the largest volumes of energy imports from the Middle East, shipments of liquefied natural gas (LNG) have also increased significantly in recent years since China became a net natural gas importer for the first time in 2007.

In 2012, China's LNG imports reached 706 billion cubic feet (bcf), a 20% increase versus 2011 when volumes stood at 581 bcf, according to the EIA. LNG imports into China jumped by another 25 percent to about 880 bcf last year. The country now roughly consumes above 6 percent of the global LNG trade, and ranks as the world's third-biggest LNG importer.

Although gas still plays a relatively minor role in China's domestic energy mix at about 4 percent now, according to the EIA, this is expected to rise to about 8 percent of total energy consumption by 2015 and to 10 percent by 2020, bolstered by the recent agreement with Russia. Future demand for the clean-burning fuel is largely driven by the need to alleviate high pollution resulting from China's heavy coal use, which is a main cause for the country's environmental degradation.

With LNG demand on the rise, China has sought to diversify its import sources geographically away from its traditional suppliers Australia, Indonesia and Malaysia, and entered into long-term supply contracts with Qatar and Yemen, as well as Egypt, Nigeria, Oman and Algeria, which together accounted for more than 42 per cent of total LNG imports in 2012**. In the future, these are likely to be expanded on, while new sources from countries such as Mozambique will also be added.

The picture looks similar in the commodities

sector. Here, Africa plays a key role to meeting China's unrelenting domestic requirements. According to data from consulting firm KPMG, China accounted for almost 17 percent of the world's mineral imports by value in 2012, while 16 percent of Africa's exported commodities by value were shipped to the Asian heavyweight.

In total, China purchased \$100 billion worth of minerals during 2012 from 100 countries, including 23 from Africa. Since 2009, China is Africa's largest trading partner and—according to the Chinese Ministry of Commerce—trade between the two sides stood at \$126.9 billion in 2010.

SILK ROAD TRADE

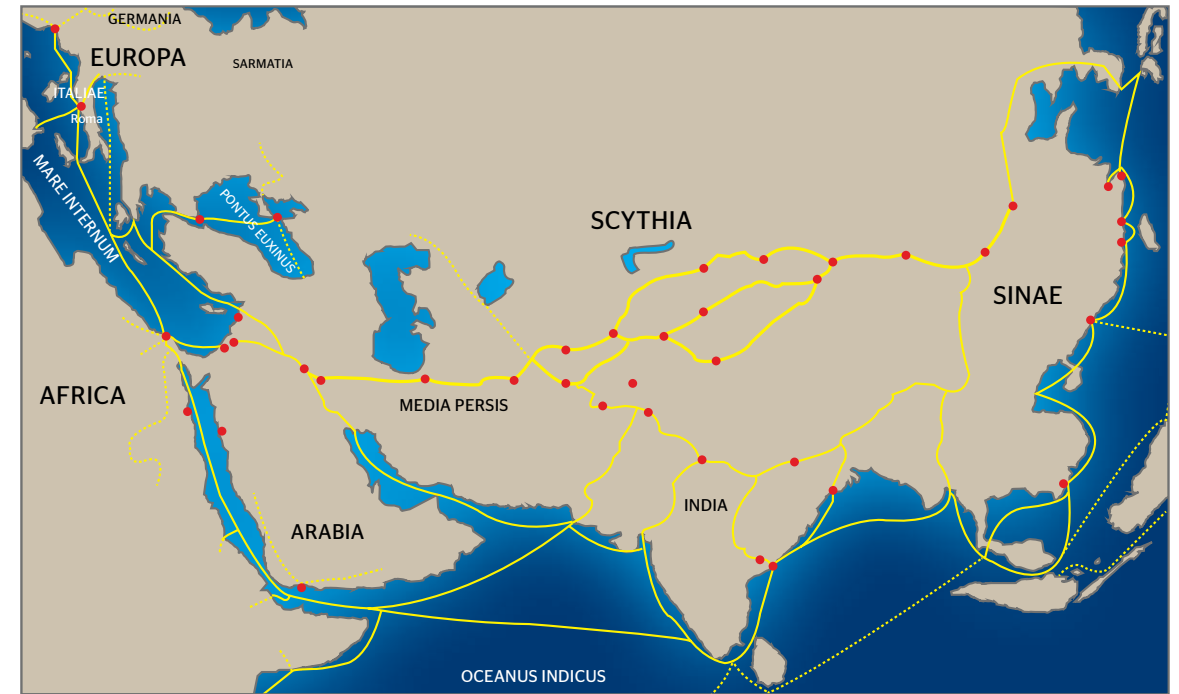
Once reflected in flourishing trade along the old Silk Road, the historic ties between China, the Middle East and East Africa are again flourishing. While hydrocarbons and commodities dominate inbound trade to China, its exports are largely made up of low-cost manufactured products that have increased the purchasing power of African consumers in particular. Bilateral trade between regional states and China has soared and keeps growing.

"China is now the largest trade partner for some of the region's most influential economies, including Saudi Arabia and Iran. In Iraq, although the US remains the country's top economic partner, Chinese investments in the oil and gas sector now account for a significant segment of the country's economic output," Ted C. Liu, a former associate fellow at European think tank FRIDE, wrote in a paper published earlier this year***.

* See: <http://www.woodmacresearch.com/cgi-bin/wmprod/portal/corp/corpPressDetail.jsp?oid=11495385>
 ** See Figure 3
 *** See: http://www.fride.org/download/PB_173_China_economic_engagement_in_MENA.pdf

FACTS: There are **4,200** Chinese companies, **356** Chinese trading agencies and **2,500** Chinese registered trademarks in the UAE. The number of Chinese expatriates residing in the UAE is close to **400,000** people. Tourism with China has surged, with **276,000** Chinese tourists flocking to Dubai alone in 2013.

FIGURE 4



This map indicates trading routes used around the 1st century AD centered on the Silk Road. The routes remain largely valid for the period BC to AD 500.

Trade between China and the energy-rich, wealthy six-member Gulf Cooperation Council (GCC) states in particular, which include Saudi Arabia, the UAE and Qatar, has jumped. From a total trade volume of \$12 billion in 2003, China-GCC trade soared to \$92.5 billion in 2010 and to \$155 billion in 2012. According to customs statistics by China's Ministry of Commerce, trade between Beijing and the GCC was up 29 per cent in the first six months of 2013 at \$77.7 billion.

China is now the GCC's largest trading partner ahead of the U.S., while Saudi Arabia has been China's largest trading partner in Western Asia and Africa over the past 10 years. Trade between the two states reached \$73.4 billion in 2012. Trade with the UAE reached \$40.4 billion during the same year, according to Chinese customs statistics.

At the same time, the GCC countries, as a group, have become the largest oil suppliers to China, meeting about 35% of its total crude oil requirements in 2012.

HISTORIC TIES WITH NO QUESTIONS ATTACHED

China's trade relations with the Middle East and East Africa essentially date back to the first century BC and began to blossom on an

unprecedented scale after the Roman conquest of Egypt in 30 BC, with trade extending from India, Southeast Asia, Sri Lanka and China all the way to Africa, Europe and the Middle East via the Silk Road, a 4,000-mile long network of trade routes*.

The foundation for modern day Sino-African relations was laid in the post-colonial era, when China extended cooperation with Africa amid efforts to demonstrate solidarity with developing countries. Examples of Chinese support throughout that time include the \$400 million, interest-free loan provided over 1970-75 for the landmark 1,800-kilometer Tanzania-Zambia rail line.

In the Middle East, it was China Petroleum Engineering and Construction Corporation (CPECC), CNPC's international construction arm that first entered the region via Kuwait, Iraq and Pakistan in 1983. Following years of developing its business, CPECC in 1995 won an oil storage reconstruction project worth \$400 million in Kuwait as well as five highway construction projects in Pakistan.

Around the same time, in 1993, China began importing crude oil and subsequently started seeking out exploration and production opportunities in countries such as Sudan and Iraq.

* See Figure 4

ACCELERATING INVESTMENTS

China's involvement in the region has come a long way since. Investments have been stepped up significantly in key economic sectors since the 1980s, notably in energy, metals and infrastructure. At the same time, many Chinese companies have begun competing successfully with their global peers on the project front and pursued oil service contracts, winning major deals across the region and industries.

According to the latest figures of China's worldwide investments between the years 2005 to 2013 available via the Heritage Foundation's tracker, the country's companies invested a total \$48.8 billion in various sectors across the Middle East-East Africa region during that period*. Investments in the region's energy sector, covering sub-sectors such as coal, oil and gas, amounted to \$34.6 billion, or about 71 percent of Chinese companies' total regional investments, during that time. The country's total investments globally during 2005-2013 stood at \$781.5 billion, of which \$370 billion was channeled into the energy sector at large.

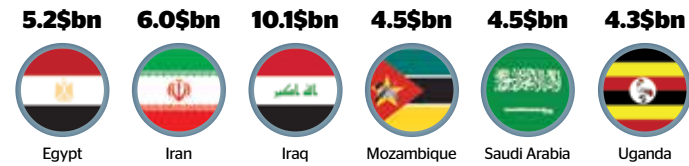
Iraq accounted for the largest share of Chinese investments in the region during the period, with \$10.1 billion channeled into oil projects in the country, ahead of Iran, Egypt, Mozambique, Saudi Arabia and Uganda**. Iraq also accounted for the single largest investment at \$5.6 billion – which reflects CNPC's share in the massive Rumaila oil field development with equity partners BP PLC and Iraq's State Oil Marketing Organization (SOMO) under a 20-year service contract.

China's second single largest investment in the region took place last year in the emerging East African energy hub of Mozambique, where CNPC acquired a 29 percent share in a natural gas field development within the Mamba Complex for \$4.2 billion from Eni East Africa, which is set to deliver the region's first liquefied natural gas (LNG) project by 2018.

Iran too has been a major destination for energy investments by Chinese companies over the past 15 years, partly due to the absence of competition from European and Japanese IOCs due to international sanctions and the need to secure additional energy supplies.

Between 2005 and 2013, Chinese companies including CNPC and China Petrochemical Corporation (Sinopec) invested as much as \$6 billion in Iran to develop oil fields such as Yadavaran or South Azadegan, although CNPC's deal to develop the latter was officially canceled in April due a five-year

FIGURE 5 MAJOR CHINESE INVESTMENT DESTINATIONS IN THE MIDDLE EAST & EAST AFRICA, 2005-2013



delay in carrying out the project.

In Egypt last year, Sinopec spent \$3.1 billion in purchasing a 33% stake in Apache Corp.'s local oil and gas business, which at the end of 2012 held some 641 million barrels of oil and 3.79 trillion cubic feet of gas in probable reserves. Total Chinese investments in Egypt for the 2005-2013 period amounted to \$5.2 billion, covering sectors ranging from energy to metals (copper and aluminum), transport and real estate.

Chinese energy companies' strategy of expanding internationally to bolster their existing portfolios and to integrate their supply chains have been reflected in their activity in the merger and acquisitions (M&A) market in recent years. The big three state-owned oil and gas companies—CNPC, Sinopec and China National Offshore Oil Corp. (CNOOC)—have all been among the most active buyers and, in 2013, China remained the largest buyer in the global oil and gas market, spending some \$22.2 billion, according to data from energy consultancy IHS***.

Where China in the past competed purely on cost advantages on the back of cheap labor, many Chinese companies have rigorously sought to build up and expand their human and technological capabilities and capacities, enabling them more often than not to compete with leading Western energy companies on an eye-to-eye level, even on technologically more demanding projects, including in the Middle East and East Africa.

Recent energy projects involving Chinese companies, such as the deal signed in April with ADNOC to jointly develop oil reserves in the emirate, Iraq's West Qurna-1 oil field or Mozambique's offshore Mamba gas developments are all cases in point.

As Chinese companies have ramped up their international investments, at home they have started spending increasingly large amounts on developing their technological capabilities while enhancing both quality of delivery and services.

* See: <http://www.heritage.org/Research/Projects/China-Global-Investment-Tracker-Interactive-Map>
 ** See Figure 5
 *** See: <http://press.ihs.com/press-release/energy-power/global-upstream-matransaction-value-plunged-lowest-level-2008-ihs-says-0>

“Where China in the past competed purely on cost advantages on the back of cheap labor, many Chinese companies have rigorously sought to build up and expand their human and technological capabilities and capacities, enabling them more often than not to compete with leading Western energy companies on an eye-to-eye level, even on technologically more demanding projects, including in the Middle East and East Africa.”

INNOVATION AND R&D

China's ambitions are reflected in the country's total annual spending on research and development (R&D). According to a joint report by Battelle and R&D Magazine published in December*, the growth in China's R&D budgets will far outpace those of the U.S. and total funding of R&D is expected to surpass that of the U.S. by about 2022. Of the \$1.6 trillion estimated to be invested in R&D globally this year, China is expected to account for nearly 18%, ahead of Japan at just above 10%, but still well below the U.S.'s 31.1%.

CNPC is leading Chinese companies in terms of R&D expenditure, spending \$2.3 billion in 2013, ranking the company 64th among the Global Innovation 1000 companies, according to consultancy firm strategy&s Ninth Annual Global Innovation 1000 report. Since 2008, the number of Chinese companies in the Global Innovation 1000 has risen from 10 to 75, with the total amount spent on R&D rising from \$1.7 billion to over \$20 billion during that period.

But it isn't only the major Chinese state oil companies that are expanding their footprints across the Middle East and East Africa. Other government-run enterprises such as China Railway Construction Corporation, China State Construction Engineering Corporation, China Power Investment Corporation and

China National Materials Group Corporation (Sinoma) among others have successful bid for and won contracts across the region.

According to the Heritage Foundation's China investment tracker, Chinese companies secured contracts worth a total \$99.4 billion between 2005 and 2013 across the Middle East and East Africa, ranging from railway construction deals in Algeria, to real-estate projects in the UAE, to power generation projects in Ethiopia, Kenya and Uganda**. The large number of contract wins, including more challenging and complex projects, is partly a reflection of Chinese companies' growing capabilities.

To be sure, many Chinese companies still compete on price rather than quality. However, it has been widely recognized in China too in recent years, that for its companies to compete globally in the long run, quality gaps need to be filled, innovation capabilities and skills will have to be upgraded, and more sustainable business models must be developed.

STRATEGIC SUPPLY-DEMAND PARTNERSHIP

Just as many Chinese companies are elevating their technical competence, so is the relationship between China and the Middle East & Africa region maturing, after a period

* See: http://www.battelle.org/docs/tpp/2014_global_rd_funding_forecast.pdf?sfvrsn=4
 ** See Figure 6

in which China's Premier Li Keqiang recently acknowledged included "growing pains." As the Asian economy continues on its growth path, its dependence on energy imports from the West Asia region is set to soar further over the medium to long term.

As a result, more Chinese investments are likely to be directed at opportunities in the region's energy sector, in particular on the upstream side. However, as the example of Sinopec's partnership with Saudi Arabian Oil Co. (Saudi Aramco) in the Yanbu refinery on the kingdom's Red Sea coast shows, opportunities are being considered along the whole energy value chain.

While investments such as Sinopec's are based on commercial considerations, they clearly serve a broader strategic interest. On the one hand, outward investments by Chinese national oil companies (NOCs) are a way of building and deepening strategic relationships with oil and gas-producing countries as a means of ensuring energy security; on the other, they also represent an opportunity to build up technical know-how and develop human skills through entering into partnerships with leading NOCs such as Aramco and IOCs such as BP, the latter of which is CNPC's partner on the Rumaila oil field development in Iraq.

Moreover, Chinese NOCs' partnerships with or acquisitions of other industry players are enabling them to develop expertise in previously uncharted territory such as deepwater—CNOOC working with Total in Nigeria's Akpo and Egina deep-water fields being a case in point—or unconventional. To this end, CNOOC in 2013 spent \$15 billion on Canadian upstream oil and gas firm Nexen, whose business includes oil sand and shale gas plays. Also in Canada, Sinopec acquired oil and natural gas company Daylight Energy for \$2.2 billion in 2011, and a year earlier bought a stake in the Syncrude oil-sands project in Alberta.

With much of the world's future hydrocarbon production to come from harder-to-access resources and more remote territories, including in China—holder of major shale oil and gas reserves—Chinese companies are positioning themselves to play a greater role in the Middle East and East Africa too, where the era of post-east oil is well under way. Against this backdrop, deals such as CNPC's equity stakes in Abu Dhabi and Mozambique, or Sinopec's Saudi refinery investment, won't remain isolated transactions in the region. ■



To be sure, the region remains heavily reliant on US and Western military for security support and trade, and—to a large extent—on Western energy companies' technologies. As such, Chinese companies will receive a greater share of the regional energy pie in the future, but, given the region's strategic considerations, a large portion will continue to be awarded to Western firms, including IOCs.

What is clear, however, is that Chinese companies' involvement in the area will become more and more a symbiosis of common interests. Going forward, China's outbound energy investments will increasingly be counterbalanced by investments from the likes of Saudi Aramco, Qatar Petroleum and Kuwait Petroleum Corp., all of which are already involved in one way or another in downstream refining and petrochemical projects in the Asian country.

For existing and upcoming energy producers in the Middle East and East Africa this symbiosis will be essential in their strategy to secure long-term demand security, in particular for their heavy crude grades, amid an increasingly energy-independent U.S. and rising energy export flows out of North America.

The new era of an old relationship between China and the Middle East and East Africa may have just been rekindled, but like the bygone era of millennia past it will need to be a clear win-win framework to underpin the 21st century partnership. ■



“We Are Not Colonialists”, China's Premier Says

Q&A with China's Premier Li Keqiang on China's Engagement with Africa - Deflecting Criticism of 'Neo-Colonial' Posture

Q *In recent years, there have been some media reports about imbalance in China-Africa trade, substandard Chinese exports to Africa, and violation of local labor regulations by Chinese companies -- How do you view such problems in China-Africa cooperation?*

A As China-Africa relations grow rapidly in all areas, companies of the two sides have encountered “growing pains” and some new problems in their cooperation that call for

proper settlement. The Chinese government takes these issues very seriously. Instead of dodging or covering them up, China is willing to sit down with African countries and resolve these issues through earnest consultation in the spirit of mutual respect, pragmatism and efficiency. Here, let me reiterate that China will continue to carry out cooperation with Africa under the principle of sincerity, equality and mutual benefit, and urge Chinese

companies to strictly abide by local laws and regulations, hold themselves accountable to the quality of the contracted projects and goods and to consumers and shoulder due responsibility to local communities and the environment. At the same time, I call on relevant African countries to strengthen market regulation and public security measures and protect the lawful rights and interests of Chinese companies in Africa and the safety of their employees.

Problems, after all, are isolated cases in the whole picture of China-Africa cooperation. In recent years, the deepening of cooperation has been the mainstream and general trend. In 2013, China-Africa trade reached US\$210 billion, 2,000 times that of 1960. China has been Africa's biggest trading partner for five years running. More than 2,500 Chinese companies are operating in Africa, creating over 100,000 jobs for the local communities. Last year, the over 1.4 million visits by Chinese travelers generated huge amount of exchange revenue for Africa. According to an IMF report, China-Africa cooperation has contributed to more than 20% of Africa's development. The "China factor" has been more and more evident in Africa's development. China-Africa cooperation has brought real benefits to peoples of both sides and holds broad prospects.

Q *China is accused of pursuing "neo-colonialism" in Africa by some media. What is your comment?*

A China and African countries are tested brothers and partners committed to common development. In the cooperation with Africa, China has always upheld the principles of equality, mutual benefit, real results, efficiency, sincerity and credibility and never attached any political strings to its

assistance to Africa. This has been China's decades-long practice without any deviation. China-Africa cooperation has contributed to Africa's development with a keen focus on social development and people's wellbeing. The aim is to improve Africa's investment environment and its people's lives. Numerous infrastructure projects built with Chinese assistance, including schools, hospitals, stadiums and urban water and power supply systems, have improved the living and working conditions of African people. To lessen Africa's burden, China had altogether canceled RMB20 billion worth of debts owed by African countries by the end of 2013. To enhance African countries' own development capacity, China has worked actively to help African countries develop their own modern and well-equipped manufacturing sector and agricultural system through industrial and financial cooperation to strengthen the foundation of China-Africa cooperation. For China and Africa, cooperation means opportunities; cooperation is win-win.

Like many African countries, China once suffered foreign invasion and fell under colonial and semi-colonial rule. "Do not do to others what you do not want done to you" is a millennia-old idea important in Chinese civilization. The so-called "China's neo-colonialism in Africa" is a false accusation inconsistent with Chinese tradition and culture, and does not reflect the reality of friendly, equal-footed and mutually beneficial cooperation between China and Africa. A number of African leaders have stated in public that Africa, with a history of colonialism, knows well what colonialism means and will not be misled by such accusation. I wish to assure our African friends in all seriousness that China will never pursue a colonialist path like some countries did or allow colonialism, which belonged to the past, to reappear in Africa. China will forever be a reliable friend and true partner of the African people and contribute to Africa's endeavor in developing its beautiful home continent.

Q *What is your impression of Africa?*

A I visited Egypt in 2009, but I did not see the whole of Africa. I have read some books about Africa, and I learned that the entire Africa consists of the Arab region in the north and the Sub-Saharan Africa. It is a vast, fertile and fascinating continent. Africa has a time-honored and brilliant civilization. There are over 1,500 tribes and more than 2,000 languages in Africa, and it is known

as the origin of human civilization. Africa is well known for the mighty Nile River, the majestic Mount Kilimanjaro, the stunning Great Rift Valley in East Africa and the world-renowned animal migration in Maasai Mara. The African people and tribal chiefs are hospitable and African music and dances are invigorating. Africa is a dynamic continent going through rapid development and I have been looking forward to this visit for a long time.

Since the beginning of this century, the African countries have given fresh vigor to pan-Africanism and made great strides in accelerating African integration. Over the past decade and more, Africa has been a global leader in pursuing fast economic growth and made impressive achievements in economic and social development. Today's Africa, full of vigor for development, is held in high regards by the world. It is fair to say that Africa has become a major force in moving the world towards multi-polarity, an important emerging market that helps promote global economic recovery and integration, and an outstanding representative of diverse civilizations in the world. I have great admiration for the spirit of unity and perseverance of the African people and have full confidence in the bright future of Africa's development.

Q *Despite great changes in the world in the past 50 years and more, China-Africa relationship has remained strong and grown in strength. What has made this possible?*

A China-Africa relationship has a long history and is full of vitality. Since the 1950s and 1960s, our common historical experiences have brought China and Africa together, and we have forged deep friendship in our joint struggle during which we have supported each other in times of difficulty.

As a Chinese saying goes, it is easy to get a thousand pieces of gold but difficult to find a bosom friend. The Chinese people will never forget that it is our African brothers who carried us into the United Nations and we are always proud to have built the Tazara. Among all the international donations made to the people affected by the earthquake in Wenchuan, China in 2008, those from Africa were particularly appreciated; at the United Nations and other multilateral organizations, China has always voiced its strongest support in upholding the legitimate rights and interests of Africa and other developing countries. To us Chinese, the African people are always our good brother, good friend and good partner



who are trustworthy and reliable. Having long overcome the barrier of geographical distance as well as cultural and social differences, China-Africa relationship has become a pacesetter of South-South cooperation featuring sincerity, mutual trust and harmony.

China-Africa cooperation has created vast space and strong driving force for our respective development endeavors. More importantly, it has contributed to elevating the overall status of developing countries and promoting human progress. China is ready to work with African countries to enhance strategic mutual trust, deepen cooperation in upholding peace and security, boost practical cooperation, strengthen cultural and people-to-people exchanges and make greater progress in building a new type of China-Africa strategic partnership.

Q *What is the purpose of your visit? What message do you want to send to the African people?*

A This is the first time that I set foot on Africa as Premier of China's State Council and it is also my first foreign visit this year. I believe this visit will be one of cooperation and solidarity on the basis of past traditions. I will tread the path of friendship previously paved by the older generation of Chinese and African leaders, where I will feel the deep friendship based on solidarity and mutual assistance between the Chinese and African people, see for myself Africa's dynamic economic and social development, and listen to the African people's description of their expectation of good life in the future. I am

“China has been Africa's biggest trading partner for five years running. More than 2,500 Chinese companies are operating in Africa, creating over 100,000 jobs for the local communities.”

more than ready to make concrete efforts to deepen China-Africa relations and advance our cooperation in various fields to the greater benefit of our peoples.

During my visit, I will pay a visit to the headquarters of the African Union and deliver a speech on China's approach to and position on advancing China-Africa relations and cooperation in the new era. I will have in-depth discussions with leaders of four African countries that I will visit on strengthening bilateral ties and extensively engage with local people from different sectors. I will address the World Economic Forum on Africa and exchange views with participating leaders of African countries on promoting bilateral relations and cooperation. And I will call on Chinese nationals and staff members of Chinese companies in Africa. I hope that my visit will further deepen the China-Africa traditional friendship, upgrade practical cooperation, enhance solidarity and mutual assistance and promote common development. I hope that through my visit, the 1 billion African people will strengthen their understanding that the 1.3 billion Chinese people are always their sincere friends and reliable partners and that China is ready to pass on the relay baton of China-Africa friendship to future generations together with Africa.

As an African proverb goes, if you want to walk fast, walk alone; if you want to walk far, walk together. The ever fresh friendship and thriving comprehensive cooperation between China and Africa deserve to be valued and cherished by our people. China will treat the African people with sincerity, strengthen solidarity, promote common development through win-win cooperation and realize our glorious dreams of great renewal at an early date.

Q People often say that China-Africa cooperation enjoys great opportunities ahead. Where do you see these opportunities? What specific measures does China take to promote future China-Africa cooperation?

A China is the largest developing country and Africa is the continent with the largest number of developing countries. Both China and Africa face the urgent task of developing economy and realizing modernization. Since entering the new century, China and Africa have seized the historic opportunities presented by the deepening of globalization, worked together and helped each other achieve win-win outcome. The relations between the two



sides have entered a “golden period”. Both China and Africa have benefited a lot from China-Africa cooperation. China is at the critical stage of comprehensively deepening reform and speeding up the transformation of the economic development model.

Africa, on its part, has also started its new path of seeking strength through unity and promoting development for renewal. China-Africa cooperation is thus faced with new opportunities of making great strides forward. During my visit, I will work with leaders of the African states and the AU, and Chinese and African business representatives in an earnest, practical and enterprising spirit to review the past experience, identify room for improvement and discuss new areas, channels and formalities of China-Africa comprehensive cooperation so as to upgrade our cooperation.

China and Africa will expand exchanges and cooperation in poverty reduction for common development. Over 100 million people in China still live below the poverty line. Africa is also faced with many difficulties and challenges on the road towards the Millennium Development Goals. China and Africa are committed to developing economy and improving people's livelihood, which makes poverty reduction one of the highlights of China-Africa cooperation. China is ready to share with Africa its experience on poverty



“ Having long overcome the barrier of geographical distance as well as cultural and social differences, China-Africa relationship has become a pacesetter of South-South cooperation featuring sincerity, mutual trust and harmony.”

reduction and agricultural development, enhance agricultural cooperation with Africa and help Africa train technical and managerial personnel on agriculture. We hope poverty reduction will help Africa achieve sustainable development and bring the African people a more dignified life.

China and Africa will strengthen industrial and commercial cooperation and promote Africa's industrialization and manufacturing sector. Africa has entered the fast track of growth and its modernization process is gaining momentum. China is ready to bring into full play its advantages and take an active part in Africa's infrastructure development so as to promote connectivity on the African continent. Through infrastructure building, we will promote industrial cooperation and help Africa to focus on developing labor-intensive manufacturing, which will create jobs and boost consumption. China will also create new ways of investment and financing cooperation to help Africa address the funding shortfalls. During the visit, the two sides will sign cooperation agreements in such areas as road, railway, aviation and electric power.

China and Africa will enhance cooperation in human resources and eco-environment so as to sustain the momentum of Africa's long-term development. Africa has the biggest potential in human resources. China is ready to train more professionals of multiple types for African countries, and provide more vocational education tailored for African young people, so as to help Africa fully and durably unleash the population dividends. As one saying goes, the key to people-to-people exchanges lies in heart-to-heart communication. China will roll out a series of projects on people-to-people exchanges and cooperation to enrich exchanges between the two peoples and promote mutual understanding and friendship. Green has always been the true color of Africa. China will have closer cooperation with Africa in this field and provide funding to promote Africa's efforts to protect its wild animal resources and address the challenges of climate change, so that a beautiful China and a beautiful Africa will go hand in hand as we assist each other in development. ■

Investing for future generations



Established in 1996 to pursue investment opportunities in the wider energy sector both locally and internationally, Oman Oil Company aims to maximise value from Oman's resources, creating meaningful employment within Oman and growing local talents, business leaders and professionals.



Refining & Marketing

Exploration & Production

Infrastructure

40+
investments

15+
countries

7
sectors



Shipping

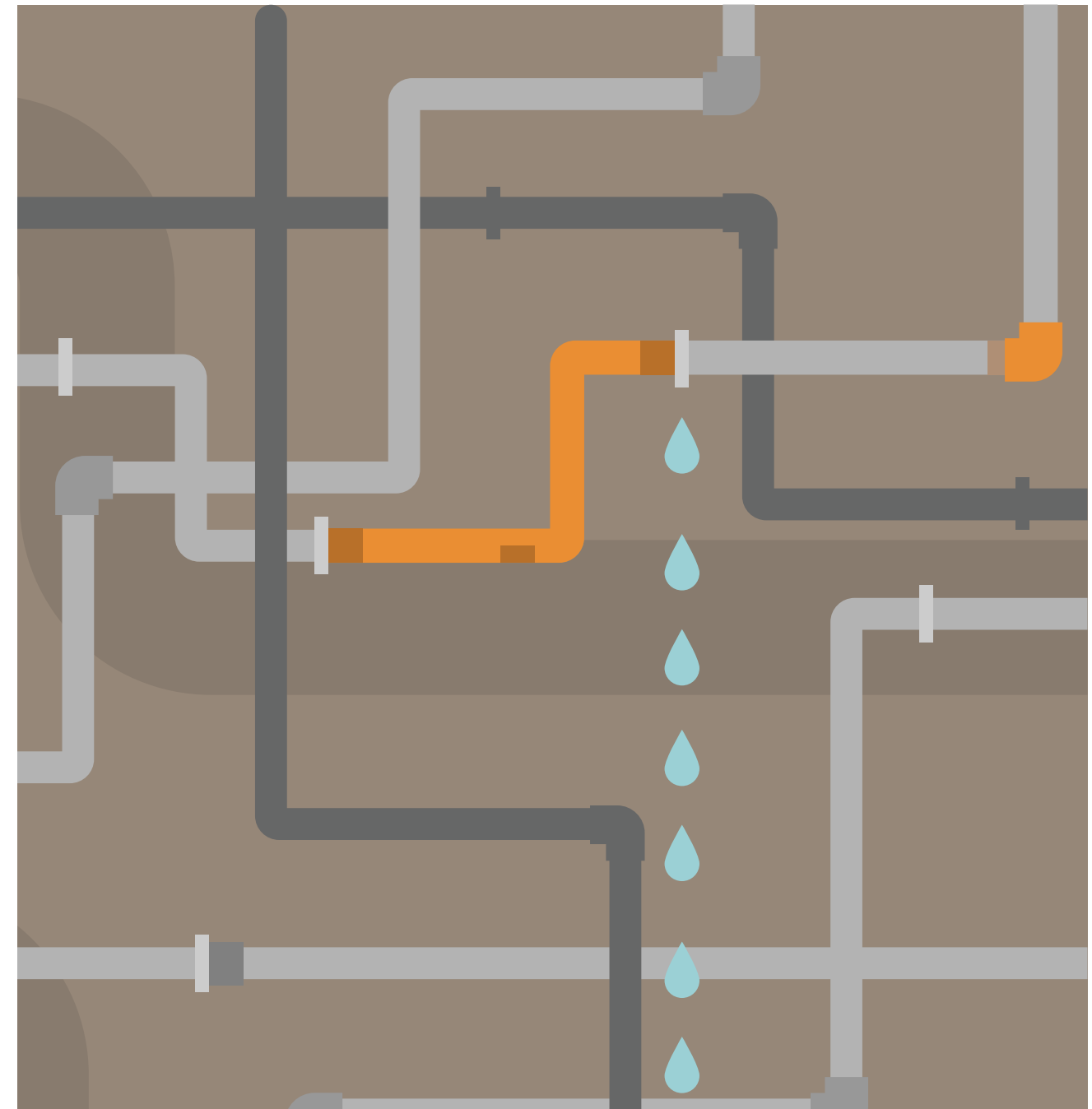
Power

Base Petrochemicals

Metals & Mining



شركة النفط العمانية ش.م.ع.م.
Oman Oil Company S.A.O.C.



Water Crisis: Think Global, Act Local!

Sean Evers, Managing Partner, Gulf Intelligence

FRESH WATER is a unique natural resource. Unlike hydrocarbons, it is essentially non-substitutable. Whether for drinking or irrigation – there is no replacement for it. As such, water is a critical resource for human life just as it is for almost all eco-systems.

Unfortunately, only 3 percent of the total water on the planet is fresh water, while about 97 percent is salt water from its oceans. Of the fresh water that's available, approximately 70 percent is frozen in glaciers and ice caps, leaving less than 1% of the total world water supply readily usable for humans.

And even though water—unlike hydrocarbons—is finite but renewable, its renewal and sustainability won't be ensured if consumption exceeds its renewal rate. At a time of rapidly-rising water usage around the globe, water resources are therefore coming under significant stress, making already existing shortages more severe.

According to the World Bank-sponsored 2030 Water Resources Group, demand for water worldwide may exceed supplies by 40 percent by 2030 at current growth rates. The Gulf states, including Qatar, which are located in one of the world's most arid regions with scanty rainfall, high evaporation rates and no rivers, are among the major contributors to this demand growth.

Driven by growing populations, the establishment of new industries and socio-economic development, the region's water supply-demand gap has widened dramatically in recent years. As a result, Gulf countries depend to a very high degree on desalination to meet their runaway water requirements. Today, the Gulf region accounts for nearly 50 percent of the world's desalinated water capacity.

In the Middle East-North Africa (Mena) region, desalination capacity is expected to

grow from 21 million cubic meters a day (cm/d) in 2007 to nearly 110 million cm/d by 2030—of which 70% is in Saudi Arabia, the United Arab Emirates, Kuwait, Algeria and Libya, according to a joint report by the International Renewable Energy Agency (Irena) and the International Energy Agency's Energy Technology Systems Analysis Programme (ETSAP).

This will contribute to the surge in energy use in the region. The annual electricity demand for desalination in Mena is expected to rise to 122 terawatt hours (TWh) by 2030, a factor of three higher compared with 2007. In the U.A.E., for example, seawater desalination requires about 10 times more energy than surface fresh water production, and its costs are projected to increase by 300 percent.

Indeed, the world's water and energy needs are so closely linked that, going forward, they can't be separated from each other. As a result, water and energy—together with food security and climate change—are the critical issues topping today's global policy agendas.

GLOBAL WATER SUPPLIES AND DEMAND EXCEEDING SUPPLIES BY

40% IN 2030



“Driven by growing populations, the establishment of new industries and socio-economic development, the region's water supply-demand gap has widened dramatically in recent years. As a result, Gulf countries depend to a very high degree on desalination to meet their runaway water requirements. Today, the Gulf region accounts for nearly 50 percent of the world's desalinated water capacity.”



Energy companies—like other industries—are consumers of fresh water, if at a smaller scale than the agricultural sector for example. Still, as global energy demand continues to rise and more water-intensive methods are being applied to extract unconventional hydrocarbons such as oil sands, effectively managing the overall use of the resource through new and advanced recycling and reuse technologies is becoming seminal.

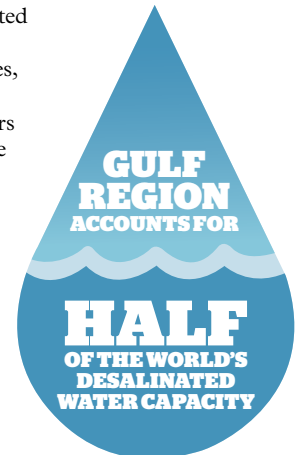
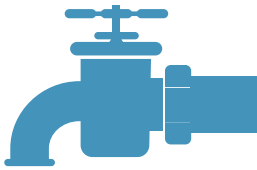
As such, the energy sector at large will have to intensify its efforts to address and prepare for future water challenges in many parts of the world. A stronger focus by the industry on research and development (R&D) into water management, reuse, recycling and desalination—as is already happening at Qatar Science & Technology Park (QSTP), where numerous international energy firms have set up shop—is therefore essential.

Qatar's particular challenges of having access to very limited fresh water reserves while at the same time growing rapidly both in terms of population and industrial development, mean the issue of water is more pressing here than in many other countries. Setting up R&D facilities in the Gulf state

therefore is an almost natural choice to tackle the water issue and develop local solutions that can ultimately be applied globally. It is also in line with the country's own vision to transforming itself into a knowledge economy and reducing its dependence on hydrocarbons.

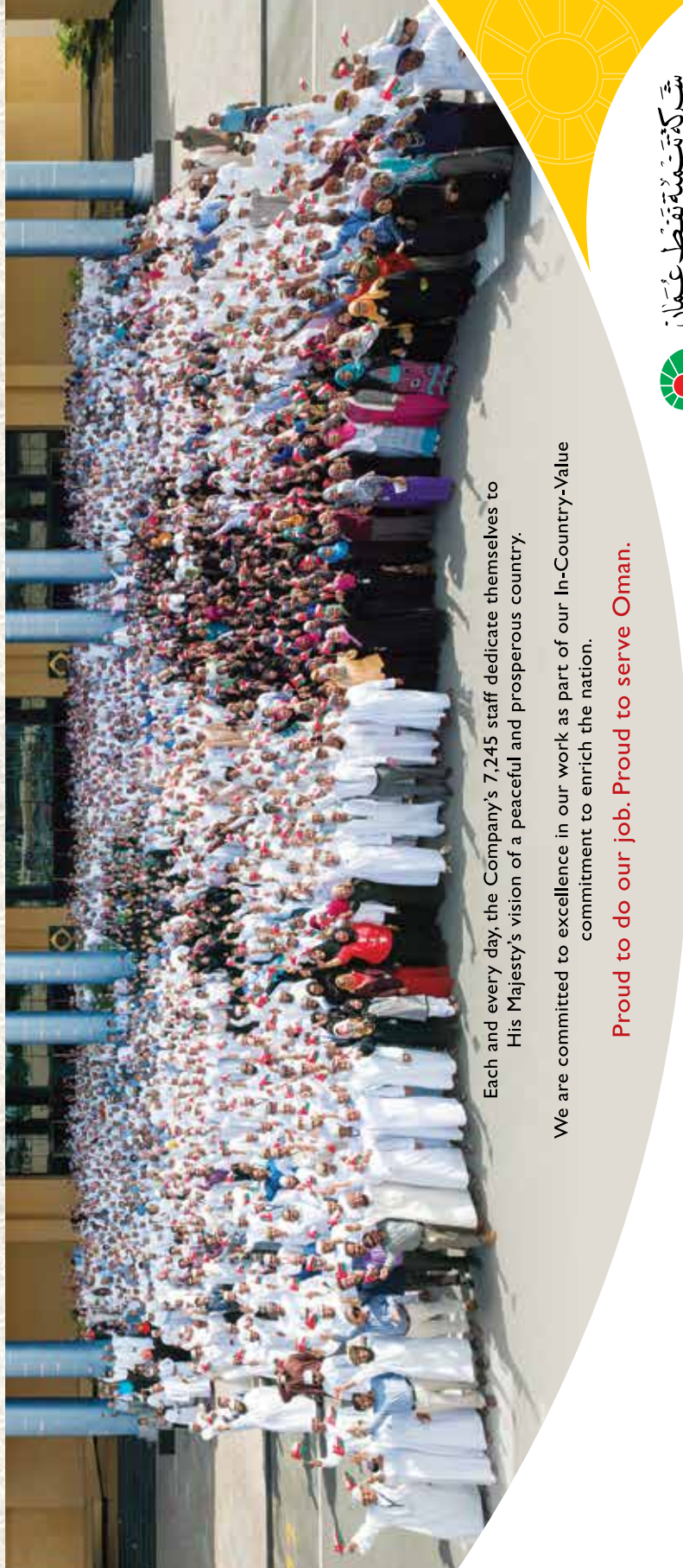
There can be little doubt that R&D will play an important role in meeting the world's water challenge going forward. But it will only be one element in what needs to be an integrated economic approach to water resource management. Apart from energy companies, other private-sector stakeholders such as agricultural producers, technology providers and industrial water users will have to make critical water management decisions.

Governments will have to introduce policies aimed at increasing efficiencies, pricing water according to its real economic value, and reducing economies' water-intensity, in particular in countries that face scarce and diminishing water resources. In short, it is vital that all stakeholders get together if a water crisis is to be averted. ■





PROUD TO SERVE OMAN



Each and every day, the Company's 7,245 staff dedicate themselves to His Majesty's vision of a peaceful and prosperous country.

We are committed to excellence in our work as part of our In-Country-Value commitment to enrich the nation.

Proud to do our job. Proud to serve Oman.



شركة تنمية نفط عُمان
Petroleum Development Oman

UAE Energy Infrastructure: Integrating New with the Old

Ali Al Jarwan, CEO, ADMA-OPCO

IN RECENT DECADES, there has been a major investment drive into various infrastructure elements in the UAE. Today, the country's transport infrastructure, for example, is ranked first in the Middle East and 11th worldwide.

A sustained and joint push by GCC countries towards building out and integrating their transport and energy infrastructure further will produce great benefits. Sitting at the crossroads of old and new trade routes such as the south-south energy corridor, which links Africa, the Middle East and Asia, the UAE and its Gulf neighbors have an opportunity to use their strategic geographic location and advanced infrastructure to capture a growing share of the ensuing trade.

The strategy of ADNOC and its subsidiaries is to move towards greater energy

infrastructure integration – in Abu Dhabi and the wider UAE, which we have seen with projects such as IGD (Integrated gas development) and through collaboration on key strategic projects with other domestic players such as Union Railway on the sulphur rail line and with IPIC on the Habshan-Fujairah pipeline, which create economic benefits to the country as a whole and at the same provide a strategic oil supply route to global markets.

The Habshan pipeline is also a project that supports the distribution of the UAE's wealth for on the back of it storage facilities, a refinery and petrochemical units are being built at the port of Fujairah, adding significant economic value for the emirate.

Adnoc recently signed an MoU with Masdar towards exploring and developing commercial-scale projects for carbon capture, usage and



“ The UAE's infrastructure-led approach has been a key driver behind economic integration between GCC states and, by extension, with the global economy. Going forward, integrating energy infrastructure both on a national and a regional level will be seminal to ensure clean, secure and affordable energy for the UAE and other Gulf states.”

storage (CCUS), which represents another step towards greater energy infrastructure integration and greater efficiencies.

Since the Industrial Revolution, energy systems have evolved from smaller single-service systems such as steam engines that supported early mining, transportation and manufacturing into highly integrated ones, such as natural gas and electrical transmission and distribution systems that power homes, industries and businesses.

Abu Dhabi has invested heavily in its transport, trade and energy Infrastructure over the past decade. The infrastructure build-out is part of the emirate's broader strategy to diversify its economy away from hydrocarbons, transform itself into a knowledge economy and ensure sustained long-term economic growth.

At the same time, investments in new projects aimed at closer integration with the UAE's other emirates have accelerated. The integration of domestic energy infrastructure such as the Abu Dhabi-Fujairah crude oil pipeline and the UAE-wide electricity grid have strengthened Abu Dhabi's position as a global energy and trade center. This in turn has fuelled economic growth in the emirate and the UAE as a whole.

The UAE's infrastructure-led approach has been a key driver behind economic integration between GCC states and, by extension, with the global economy. Going forward, integrating energy infrastructure both on a national and a regional level will be seminal to ensure clean, secure and affordable energy for the UAE and other Gulf states.

The interconnection of the GCC electricity grid is one example of a project that has provided benefits to all member states by increasing efficiencies in the regional power sector and reducing investment requirements

into new electricity generation capacity. Similarly, the Dolphin pipeline, which transports natural gas from Qatar to the UAE and on to Oman, serves as an example of how cross-border initiatives can create value for all stakeholders.

More cross-border transport projects will be required. Today, there is no longer such a thing as a national market for energy. Gas and electricity will need to be transported over greater distances, which – in this region – will require closer collaboration between Abu Dhabi, GCC governments and, in the future, the region's neighbors.

And, as the share of renewables in the region's energy mix will grow, investments will be needed to build up the production and transport infrastructure capable of accommodating the unpredictability of renewable power generation within local and regional markets.

Beyond physical infrastructure, the emergence of trading platforms such as the DME and the DGCX are tying the UAE, and the region, closer to international markets, notably to Asia, which is the largest consumer of Gulf hydrocarbons.

There is a strong case for greater integration beyond energy infrastructure. Economic integration streamlines the flow of goods, labor, capital, and services within those countries, and puts them into a stronger position vis-à-vis the rest of the world to negotiate trade agreements. Increased intra-GCC trade, investment and development would leave hydrocarbon-exporting GCC states less exposed to global economic conditions and resulting swings in oil prices.

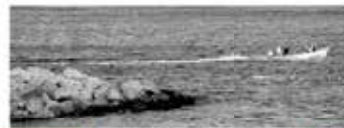
Integrated and efficient energy industry is important for the UAE as it will boost efficiencies at a time of rising domestic and global energy demand, thus integration is also important for energy security. ■



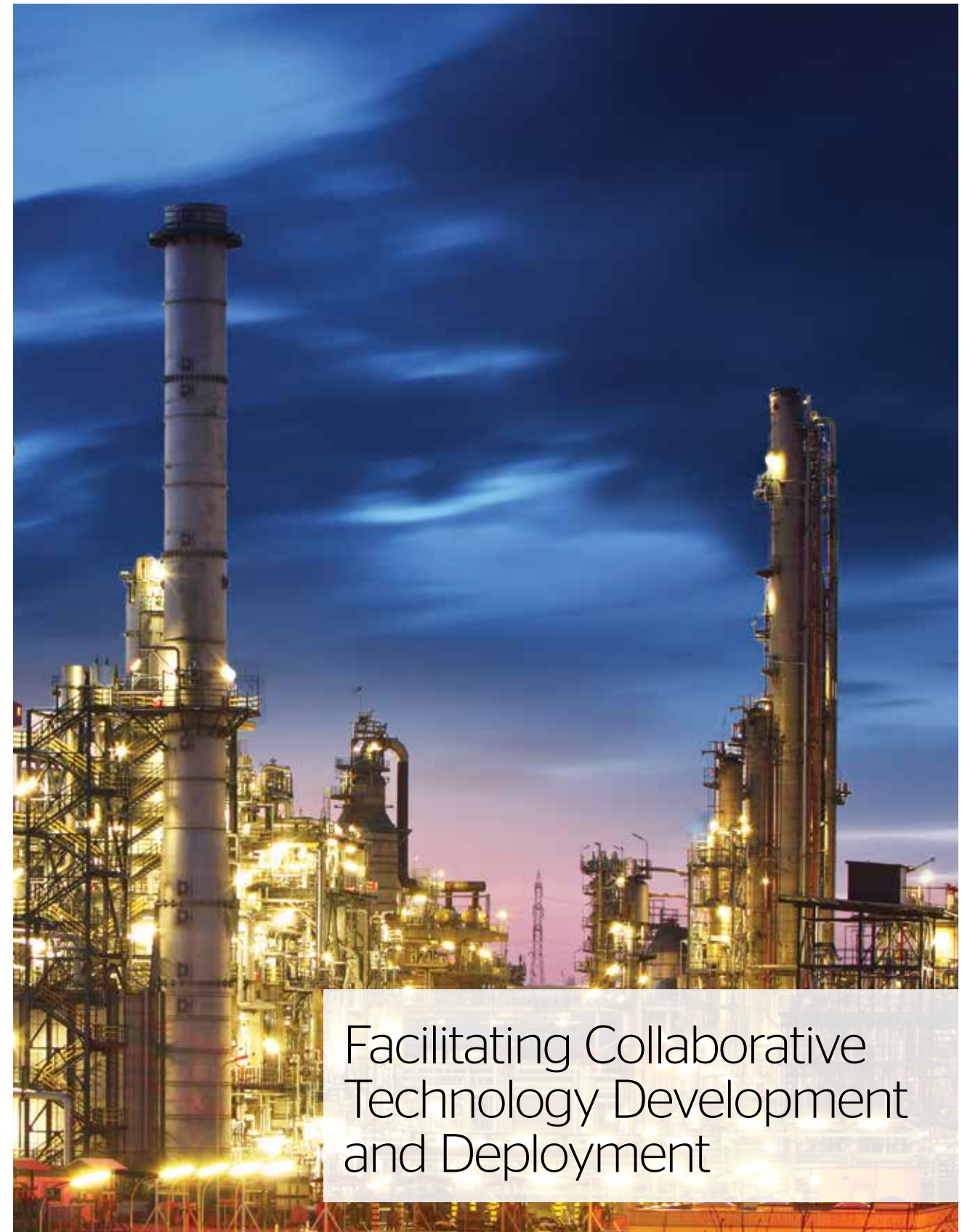
Energy to help power Oman's future



Adding value to peoples' lives is a sign of our progress. As pioneers in the production of tight gas, we at BP Oman strive to be a safety leader in our industry, a world-class operator, a responsible corporate citizen and a good employer.



www.bp.com



Facilitating Collaborative
Technology Development
and Deployment

THE NEED FOR COLLABORATION

Collaboration sits at the core of any innovation ecosystem. Creating an environment conducive to and incentivizing collaboration is particularly critical for relative innovation newcomers such as the UAE and other Gulf Cooperation Council (GCC) states as they seek to realize their ambitions to build and develop domestic research and development (R&D) capabilities and capacities as part of their broader strategies to reduce their dependence on hydrocarbons and transition into knowledge economies over the next 10-20 years.

Collaboration supports the establishment of innovation ecosystems, in which—ideally—science meets commercial vision and entrepreneurial efforts; where large investments are being channeled into human capital; and in which governments put in place the required policies, regulations and incentives. None of this will be possible without the key stakeholders from academia, industry and government coming together. With this in mind, a high degree of collaboration within and among GCC states will be essential to meet their ambitious R&D targets in the long term, in particular in light of the region’s focus on energy R&D.

“In the oil and gas sector, collaboration is especially important due to the high cost and long lead times associated with oil and gas advancements. Joint projects between oil majors/super majors, oil field service operators and strategic partners, suppliers or universities are becoming the norm rather than the exception,” according to a report on innovation in the industry published by consulting firm PwC in 2013.

INCENTIVES

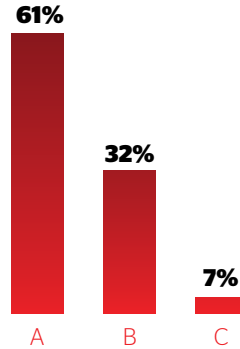
A survey carried out at the two-day ITF Members Meeting & AGM in Abu Dhabi in April 2014 showed that oil and gas companies generally have the desire to collaborate in critical energy R&D on technologies such as enhanced oil recovery (EOR). However, the survey also indicated that the absence of clear win-win incentives tends to hold back closer cross-industry collaboration that is considered essential to the development of key technologies aimed at reducing costs, accelerating production and increasing overall output.

According to the survey, almost two thirds of respondents comprising senior national and international oil industry executives and academics expressed the view that EOR specifically is an area that the regional oil and gas community wants to cooperate in.

Abu Dhabi National Oil Co. (ADNOC) has identified R&D as one of the grand challenges for the UAE to be addressed through R&D, being well aware that the time of easy oil is coming to an end, also in the Gulf region.

GRAPH1: Collaborative R&D in the oil and gas industry can be a challenging aspect at the best of times. With the competitive advantage potentially offered by EOR technologies do you feel that this is an area where the oil and gas community wants to collaborate?

- A. Yes
- B. No
- C. Don't know



“The implementation of efficient EOR methods is a key to unlocking additional reserves,” said Ali Bin Harib Al-Muhairy, Senior Vice President at ADNOC subsidiary ADMA-OPCO, speaking at the ITF forum.

But while a majority of respondents believes the interest among industry stakeholders to collaborate in EOR exists, the survey also showed that almost three quarters of those surveyed thought that the absence of obvious win-win incentives was an obstacle to industry collaboration – rather than a lack of common critical problems, which only 27 percent cited as the main obstacle for collaboration.

The need to deepen and intensify collaboration in R&D between national and international energy industry stakeholders in the UAE and in other GCC countries therefore requires the provision of clear win-win incentives. This is of particular relevance if research related to companies’ core businesses is set to be addressed.

In oil and gas, peer-to-peer collaborations in R&D are often considered to be challenging to implement if core business is involved – due to concerns over sharing proprietary knowledge and technologies or sensitive data, for example related to national resources. As a result, energy industry research involving international and national oil companies in the Gulf region often tends to focus on non-core business such as water sustainability, desalination or solar power.

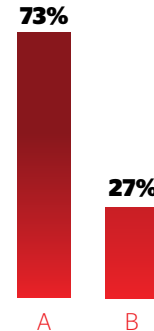
According to Dr. Nasser Al Mohannadi, Qatar Petroleum Research and Technology Manager, the reality at the moment is that the energy companies with research centers at Qatar Science and Technology Park (QSTP)

focus on non-core areas when it comes to collaboration among each other. Away from industry-to-industry collaboration, however, energy companies do focus on R&D in core areas that’s also relevant to Qatar, he said.

“As [far as] collaboration, I see this is what’s happening,” Al Mohannadi said at the forum.

GRAPH2: Collaborative R&D in the oil and gas industry can be a challenging aspect at the best of times. With the competitive advantage potentially offered by EOR technologies do you feel that this is an area where the oil and gas community wants to collaborate?

- A. Absence of obvious win-win incentives
- B. Absence of common critical problems to solve



For R&D mandates to be effective and successful in the long term, dedicated platforms will need to be created that help identify the areas where collaboration for joint industry projects is most feasible and promising in terms of producing locally-relevant results. At the same time, collaboration agreements will have to be covered and protected by clear policies and regulatory frameworks that address issues including intellectual property rights (IPRs) and the commercialization of research among others.

Against this backdrop, it may not be a surprise that a slight majority (53 percent) of survey respondents thought the R&D focus on non-core business areas was to be expected in today’s competitive business environment, in which companies often are reluctant to enter research projects with their competitors. However, 47 percent of those surveyed said collaboration in general would happen once governments provide leadership and sound legal and regulatory frameworks governing the protection of IPRs among other issues.

There is consensus that governments have a role to play in R&D but survey respondents were split over what their main priority should be, with 47 percent saying that they should focus on the creation of physical and regulatory infrastructure that facilitates research. The same percentage of respondents thought that governments’ priority should be

to engage actively with industry and academia in driving R&D activities, while only 6 percent thought the direction of R&D should be left to the market to decide.

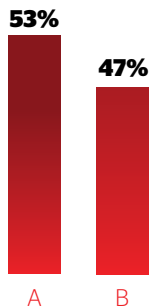
Whatever way this is being looked at, however, providing a robust legal framework is a key requirement for any GCC state with R&D ambitions because it provides the very foundations for and may facilitate companies’ decision-making processes to enter into collaborations.

“We believe that if we had a clear IP policy in ADNOC that can protect our partners, then working together on challenging problems will happen. We can get IOCs and NOCs work together. But I understand the reality: it’s true that it’s quite a challenge,” Dr. Wafik Beydoun, Head of R&D at ADNOC, said.

“I guess if the IOCs have a joint interest in developing something in a joint venture together then you’re going to see more sharing. They have a shared interest, which is the value created by the product,” added Jeremy Cutler, Head of Technology Innovation, Total E&P UK.

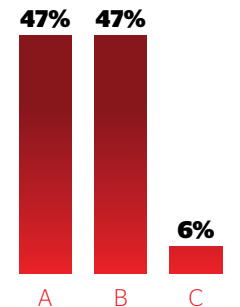
GRAPH3: Getting IOCs to collaborate in joint R&D projects may not always be feasible because of concerns over sharing proprietary technologies or sensitive data. Does that mean collaboration can only happen in non-core areas where the oil industry has a common interest in developing knowledge, for example in environmental or water issues?

- A. Yes, in reality, that’s what’s going to happen
- B. No, all it takes is a sound legal environment and Government leadership



GRAPH4: In R&D, the government has some role to play – generally speaking, which of the following should be the biggest priority for the role of government?

- A. Create physical and regulatory infrastructure that facilitates R&D
- B. Actively engage with industry and academia in driving R&D activities
- C. Let the market drive the direction of R&D activities



THE OIL AND GAS SECTOR

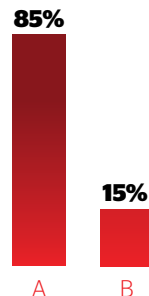
With oil and gas production diversifying, strategies shifting to the unconventional and deep offshore, and the global—and regional—energy demand curve pointing up, R&D will play a crucial role in the longevity of the oil and gas industry; no more so than in the Middle East where the era of ‘easy oil’ has come to an end and capacity building in local knowledge capital is as critical to the development of the socio-economic fabric of the region as it is to national oil companies (NOCs) seeking to develop and deploy new technologies to extract more hydrocarbon resources in the most efficient manner.

Going forward, continued strides in technological innovations that ensure energy security will require significant R&D investments to develop and produce both an increasing and increasingly secure supply of energy, while using the safest and most cost-effective methods.

Moreover, as global energy demand continues to rise and more water-intensive methods are being applied to extract unconventional hydrocarbons such as oil sands, effectively managing the overall use of local energy and water resources through new and advanced technologies is becoming seminal.

Indeed, the world’s water and energy needs are so closely linked that, going forward, they can’t be separated from each other. As a result, water and energy—together with food security and climate change—have become the critical issues topping today’s global policy agendas.

GRAPHS: The past 10 years have seen advances in technology that have triggered a transformation of the global oil industry. Will the next decade bring similar R&D breakthroughs that will allow balancing the water-energy-food nexus on the one hand and accessing harder-to-access hydrocarbon resources on the other?



“With oil and gas production diversifying, strategies shifting to the unconventional and deep offshore, and the global—and regional—energy demand curve pointing up, R&D will play a crucial role in the longevity of the oil and gas industry.”

Finding solutions to these increasingly complex technical problems and meeting economic challenges that demand major R&D investments and capital projects will only be achievable through collaboration among all key stakeholders – industry, academia and governments.

What is needed will be continued—and increased—innovation in technology areas such as exploration, drilling and production as well as industrial water reuse and desalination, and in developing a network of highly-skilled individuals to develop and deploy them.

Although the list of challenges is long, the overall sentiment among those surveyed at the ITF forum was that the next 10 years will produce technological innovations that will have a similar impact on the global oil and gas industry as the breakthroughs that triggered North America’s shale revolution. The vast majority of survey respondents (85 percent) expressed the view that the next decade will bring R&D breakthroughs that will help manage the global water-energy-food nexus and at the same time allow accessing harder-to-reach hydrocarbon resources.

COLLABORATION IN UKCS

The UK’s oil and gas sector is among those that will require technological innovation and a much greater level of collaboration among industry and government stakeholders to meet the challenges it is presently being faced with.

The UK Continental Shelf (UKCS), which holds the vast majority of the UK’s hydrocarbon reserves and accounts for the bulk of domestic oil production, is an area faced with a mix of falling production and

investments, rising cost, reduced exploration drilling and smaller discoveries.

In a bid to stem the challenge, the UK Secretary of State for Energy and Climate Change last year appointed Sir Ian Wood to review the regulation of the UK offshore oil and gas industry and outline sector strategies and implementation plans to maximize the economic recovery from the UKCS.

Among the six main reasons explicitly stated by the Wood Review for being responsible for the decline in output from UKCS are ‘lack of collaboration between operators’; ‘lack of focus on maximizing economic recovery for the UK, as operators have pursued individual commercial objectives in isolation with limited shared commitments’; and ‘lack of government stewardship due to an under-resourced upstream regulator’.

“Cross-industry collaboration will be essential to develop and promote key technologies to reduce costs, accelerate production and increase overall production recovery if the UKCS is to capture the 12 billion-24 billion of barrel oil equivalent (boe) reserves estimated to be left in the North Sea,” Total E&P UK’s Cutler said.

THE GULF REGION

The UAE, like most of its Gulf neighbors, sits at the heart of the global energy industry, being a major producer and exporter of oil and gas. Building on these foundations by developing R&D centers is a logical extension of the Gulf states’ existing capabilities.

The UKCS experience can provide some guidance as to what a model for deeper and broader collaboration among key stakeholders may look like, in particular at a time when the region is entering the era of post-easy oil.

Bolstering stakeholder collaboration and developing R&D capabilities and capacities will have to go hand in hand with a string of initiatives aimed at building national capacity in Gulf countries. This includes providing incentives for researchers to commit to a country for the long term and instilling interest in science among the young as part of wider reforms to the local education system aimed at ensuring the creation of relevant skills and a pipeline of local talent – all of which are needed to sustain local research plans in the future and to support the transformation into knowledge economies

It also includes university-industry partnerships, which are generally being



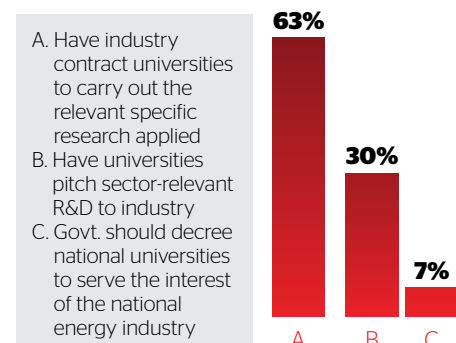
looked at as offering potential win-wins for both sides. Deeper collaboration between industry and universities provides academia with a better understanding of what energy companies' needs are, while at the same time offering industry an opportunity to provide input on university curricula. For industry it may also be a way to accelerate time-to-market for new products and services; while for universities it could provide an additional or alternative source of funding.

Capacity building at regional NOCs is another area of importance given the skills shortage that the industry in- and outside the region is faced with.

“Since the beginning of petroleum production, research and development has been the key to increasing recoverable reserves. Other than the economic benefits of fostering new technology, NOCs in the region are motivated by a number of other factors,” Deloitte said in a report published earlier this year on technology in the energy sector.

“With the region’s NOCs looking to continuously diversify across the value chain to transform into fully-integrated energy companies, there is an increasing need for specialist skills. These skills have traditionally been brought in from abroad and through IOCs. Nevertheless, in recent years we have seen the creation of specialist research and training centers across the region to somewhat counter this importing of skills.”

GRAPH 6: What is the best strategy to pursue to get academia in the UAE and across the Gulf to develop its scientific research base and deliver low technology readiness level (TRL) solutions to meet the oil and gas industry’s challenges?



Against this backdrop, 51 percent of the ITF survey respondents held the view that building national education capacity should be the biggest priority for the UAE and other Gulf states to advance their R&D ambitions

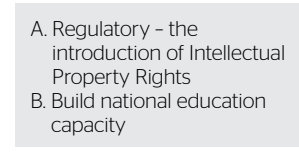
“ Given the oil and gas industry’s size and importance in the hydrocarbon-rich Gulf region in particular, regional academia is well placed to delivering low technology readiness level (TRL) solutions—the level at which scientific research begins to be translated into applied R&D—to the industry to tackle relevant local challenges going forward.”

in the short to medium term. The remaining 49 percent expressed the view that the priority should be the introduction of IPRs.

Given the oil and gas industry’s size and importance in the hydrocarbon-rich Gulf region in particular, regional academia is well placed to delivering low technology readiness level (TRL) solutions—the level at which scientific research begins to be translated into applied R&D—to the industry to tackle relevant local challenges going forward.

According to the survey, 63 percent of respondents thought that the best strategy to getting academia in the UAE and elsewhere in the Gulf to develop its scientific research base and deliver solutions to the oil and gas industry would be to have industry contract universities to carry out specific applied research work.

GRAPH 7: Which of the following should be the biggest priority for the UAE and other Gulf States to adopt in order to advance its R&D ambitions for the short to medium term?



CONCLUSION

Governments around the globe have recognized the need to step up R&D efforts and seek stakeholder collaboration. Brazil is a case in point. The government is making billions of dollars of funding available to help promote research that will spur offshore oil exploration – about 25 percent of the country’s oil production comes from deepwater fields.

In addition, regulations have been introduced for companies bidding on highly productive oil and gas contracts that require operators to reinvest 1 percent of gross revenues into local R&D, both internally and externally at local universities, a portion of which funds scholarships within oil and gas-related studies.

In Norway, the innovation system is based on a high degree of collaboration between suppliers of technology solutions and their customers, the operators.

The importance of greater collaboration among all stakeholders involved in building innovation ecosystems in the Gulf region is equally important. ITF, whose key objectives are to identify technology needs, foster innovation and facilitate the development and implementation of new technologies, has the potential to play an increasingly important role in facilitating this type of collaboration.

The reason is clear. ITF has the ability to engage with industry and facilitate work on new technology developments on an international platform. Developing technology through ITF allows its members to spread the risk and cost of R&D, enabling expenditure to be allocated more effectively and expertise and knowledge to be shared, globally and in the Gulf region. ■

Takeaways from the annual ITF Members Meeting AGM held in Abu Dhabi, UAE in April 2014.



Delivering Energy Security
Through Energy Efficiency

Dyala Sabbagh, Partner, Gulf Intelligence

WITH GLOBAL energy demand set to roughly double by 2050 versus today's levels, ensuring uninterrupted energy supplies at affordable prices has become a top priority for most countries.

Whether in Asia, Europe or in the hydrocarbon-rich Gulf region, which is emerging as a major energy consumer in its own right, energy security has never been more important to ensure economic development, economic stability and economic security. Improving energy efficiency—in other words using less energy to provide the same level of energy service—is integral to managing and restraining growth in energy consumption, and thus a powerful tool to ensure and sustain energy security.

Moreover, enhanced efficiency doesn't just save raw materials and energy; it also offers an alternative to new power generation investments and reduces emissions, in turn helping address critical topics such as global warming and climate change. It is of particular importance at a time when the production of energy is becoming increasingly intertwined with that of water and agriculture, putting all these vital resources under greater pressure as demand for all of them continues to rise on the back of rapid world population growth.

QATAR

It is in this context that Qatar in November identified energy and water security as two of the grand challenges to be addressed through research and development (R&D) in coming years. Being one of the world's top energy consumers on a per capita basis, partly because of the Gulf state's heavy reliance on seawater desalination due to a lack of large freshwater resources, achieving greater energy efficiencies will be integral to developing a sustainable economy over the mid to long term.

Encouraging innovation and competition through R&D will play a seminal role in the development of more energy-efficient solutions for new and existing infrastructure such as power and industrial plants, buildings and transportation. Research into energy-efficient smart electricity grids, more efficient desalination and low-carbon technologies such as CO₂ enhanced oil recovery (EOR)—which is already under way in other parts of the world—could go a long way in helping address efficiency issues, both in Qatar and elsewhere, and as a result deliver greater energy security and better resources management.

Initial steps are also under way in the Gulf state towards managing existing facilities in a more efficient manner and raise the general level

of awareness on the issue. Under Qatar's Vision 2030 and the Qatar National Development Strategy 2011-2016, for example, the country aims to reduce the energy intensity of electricity consumption through awareness campaigns, standardization and seasonal shutdowns, which will generate noticeable energy savings.

Boosting efficiencies also extends into other areas of Qatar's energy value chain. The country holds major hydrocarbon resources, including the world's third-largest gas reserves after Russia and Iran. Ensuring that these resources are recovered and produced in the most efficient and sustainable manner is crucial for the longevity of Qatar's hydrocarbon sector and—given its size and importance—the overall economy.

The moratorium on the North Field, whose development has made Qatar's rise to the top of the world's liquefied natural gas (LNG) exporting nations possible, highlights the importance of extracting national hydrocarbon resources as efficiently as possible to sustain their availability and value in the long term.

TECHNOLOGIES

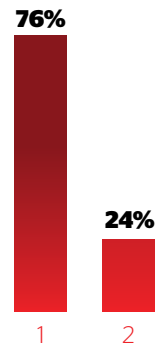
Wherever efficiencies are being targeted, they won't be achieved without the application of innovative technologies and the development of new ones. The benefits are potentially enormous.

"The potential for advances in technology to increase recovery efficiency, even in small increments, will have huge impacts on the ultimate value extracted from Qatar's natural resources," Hamad Rashid Al Mohammadi, CEO of RasGas, said at the The Gulf Intelligence Energy R&D Forum in Doha earlier this year.

Technology advances in the oil and gas industry have been rapid in recent decades and triggered a period of transformational change throughout the industry.

GRAPH 1: Thanks to R&D, the past 10 years have seen advances in technology that have triggered a transformation of the global oil industry. Will the next 10 years bring about a similar step change enabling a balance in water-energy-food nexus while accessing ever-more remote and harder-to-access hydrocarbon resources?

1. Yes, of course, as technologies trigger change, not follow
2. No chance, profit and sustainability are on collision



Innovations, often bolstered by information technologies finding their way into the energy sector, have altered the way oil companies operate across all verticals, from identifying reserves to exploring and developing them to production. Investments in R&D and new technologies have been behind the breakthrough in shale oil and gas developments in North America, which only 10 years ago weren't on anyone's radar.

In a survey conducted at The Gulf Intelligence Energy R&D Forum among nearly 150 leaders from academia, government and industry, more than three quarters of all respondents expressed the view that similar technological advances will drive another period of transformation in the next 10 years, as the world seeks to find solutions to the nexus of water, energy and food, of which energy efficiency will be a key element.

For Qatar, investing in R&D into energy-efficient technologies and solutions is particularly important at a time when domestic electricity consumption continues to grow at a rate of about 7 percent annually, driven by rapid population growth and expanding industries, putting increased strains on existing natural gas resources to provide feedstock for the country's growing number of gas-fired power plants.

"The only way to face this challenge is that we need to focus on the best possible means to improve utilization of power plants, good cost control, power plant efficiency and power

generation through other means such as renewables," Fahad Hamad Al-Mohannadi, General Manager of Qatar Electricity and Water Company (QEWCo), said at the forum. "Power stations should be run on maximum efficiency and old plants should be replaced with higher-efficiency plants."

While Qatar, unlike its Arab Gulf neighbors, doesn't face a gas shortage, freeing up the resource from being burned in power stations by increasing their efficiency and introducing more alternative energies, and thus saving gas for future use or diverting it into the development of new petrochemical production, for example, would add more value to the national economy.

The need for greater efficiency is also obvious in the water sector, where according to expert estimates, losses of desalinated water—produced with energy generated at gas-fired power plants—through distribution and delivery, range between 10 and 40 percent across the Gulf region.

Another example for the need to introduce greater efficiencies is the transportation sector. Transport currently accounts for more than half of the world's oil consumption and 28 percent of global energy use, of which around 40 percent is used in urban transport alone. Improving the energy efficiency of urban transport systems globally could save as much as \$70 trillion in spending on vehicles, fuel and transport infrastructure by 2050.



Qatar is addressing the issue with the construction of a tram system being built in Doha by Siemens that will consume up to 30 percent less energy per year than conventional tram systems. Utilizing a technology called Sitras hybrid energy storage (HES), the trams will also produce less CO₂ than vehicles without the HES systems, thus contributing to energy conservation and climate protection.

“When talking about maximizing resources, there needs to be fundamental research aimed around how you expand the resource base and make more forms of energy available,” said one industry executive at the forum.

“That can be hydrocarbon resources; that can be solar; it could be anything. It’s just about expanding that resource base because the energy demand of the future is going up. And it’s significant because it ties to population growth and economic growth and all those factors. So one needs to look into the value chain. There’s the diversification of the resource base and expanding supplies. But then there’s also the kind, which is the energy intensity and efficiency. That’s the other end of the value chain. You need to have dedicated streams of research there.”

R&D and technological innovation will be integral to driving industry efficiencies going forward. But other, complimentary measures will need to be implemented by GCC governments to ensure they do indeed have the full desired impact, notably an upward review of domestic energy and water pricing.

While reducing subsidies—or even thinking it out aloud—remains politically sensitive, it is an issue that will need tackling in one way or another in the not-too-distant future in the GCC, since the region’s low energy and electricity prices, which are well below international benchmarks, have been the main contributors to strong energy demand growth and encouraged investments into inefficient infrastructure across all economic sectors.

With this in mind, achieving greater energy efficiency across the economy in Qatar, as in other Gulf states, will require the introduction of a comprehensive regulatory framework centered around a sustainable long-term policy that also addresses energy—and water—pricing. This will also have to include the provision of incentives and obligations to adapt energy-efficient solutions and technologies, which in turn will have to be monitored and enforced.

National and international energy companies have an important role to play in addressing the overall efficiency challenge by driving R&D,

“The potential for advances in technology to increase recovery efficiency, even in small increments, will have huge impacts on the ultimate value extracted from Qatar’s natural resources.”

Hamad Rashid Al Mohannadi, CEO of RasGas

innovation, and the development of advanced technologies. Today, many of them are already pursuing R&D and innovations at the Qatar Science and Technology Park (QSTP) in Doha.

GOVERNMENT

But it is governments that hold the key to creating environments in which R&D can thrive – and there is increased recognition that R&D can play a key role in addressing the energy and socio-economic challenges in the region. Supporting relevant R&D as part of a national energy policy that at the same time ensures the environmentally-responsible and economically-efficient development of its resources to maximize long-term benefits is therefore in the interest of any government.

Over the past five years, Qatar has taken concrete steps to build up its domestic R&D capabilities and capacities, and at the same time implemented initiatives to enhance and expand capacity in its education system in order to build a society that embraces science and the advancement of technology. The announcement of the three grand research challenges in November has been an important step in that direction.

As the country’s R&D ambitions take shape, Qatar will, however, have to put even greater emphasis on creating a broader environment conducive to innovation, entrepreneurship and collaboration among the three key stakeholders tasked with realizing its vision—industry, government and academia.

Going forward, national and international stakeholders will have to align on identifying the sectors and industries with the biggest energy-efficiency potential within Qatar’s existing economic setup and take guidance from this on what areas stakeholders focus their R&D activities on. ■



New Horizons for OTI

As part of our commitment to expand our global reach and footprint into key international markets, Oman Trading International (OTI) is pleased to announce the opening of its Shanghai office.

OTI is an active member of the international trading community and Shanghai represents a strategic move to expand our operations into the Greater China region and the Far East.

A full-fledged trading body, OTI’s key function is to trade crude oil, petroleum products and petrochemicals globally, with plans to also trade polymers in the near future.

Our research covers the global market with offices in Dubai, Muscat, Rotterdam, Shanghai and Singapore.

For more information: www.omantrading.com

Towards an energetic future





The Changing Global Energy Map Affects Demand and Investment

Maria van der Hoeven, Executive Director, IEA

FOR THOSE of you on the producer side, certainty that energy demand will continue to grow and that your investments will bring reasonable – or even high – returns. And for those who tend to be more on the consumer side, certainty that demand will be met so that security of supply is ensured.

But one thing we all know is that in the energy sector, what is certain today may change by tomorrow.

And in recent years, we have seen considerable changes to the global energy map, many driven by rapid but shifting growth in energy demand and supply. And such changes bring both opportunity and new challenges, including meeting that demand reliably, affordably and sustainably.

This means that co-operation between industry and policy makers will be extremely important in the coming decades. And you are the right audience for this message.

This morning I would like to discuss demand and supply trends, focusing on fossil fuels, and their implications, especially in terms of investment.

I will start by looking at trends in the gas market.

In June, we released our Medium-Term Natural Gas Market Report which revealed a number of interesting developments.

On the demand side, we saw no “dash to gas” in 2013. On the contrary, growth rates slowed to only 1.2%, making it the fuel with the lowest demand growth.

While the easing of demand in the mature OECD countries was the continuation of a trend, the slowdown in non-OECD growth was often involuntary, caused by insufficient supplies that forced countries to curb consumption. The road back to much higher consumption is subject to both the timely development of domestic production for all non-OECD regions, and to being in a position to get access to imported gas, from an infrastructure, contract or price point of view.

Once those problems are resolved in much of the world, overall global demand growth should pick up again. Led by China, where domestic demand is expected to nearly double to top 300 bcm, that means an average annual increase through 2019 of 2.2%.

On the supply side, two OECD regions – Americas and Asia Oceania – will account for around 40% of additional gas volumes, with the Middle East contributing 19%.

China’s domestic supply is set to increase by around 65% in the next five years, but that won’t be enough: imports, both piped and as

LNG, will meet about half of China’s demand growth. Already, the majority of globally traded LNG flows to China, Japan and non-OECD Asia. Prices are high – though have subsided a bit recently – and that has driven major expansion of export capacity in producer countries. The standout here is Australia, which is looking to export the majority of its new output.

The United States and Canada are major producers, too, but they also have high domestic demand. While these two countries are looking to export, it will be 2015 before the first gas leaves the United States. Many export facilities are in various states of development and awaiting approvals, with one in Oregon receiving federal approval last month. But it will be some time before we see just how much North American gas makes it to the international market.

This brings me to Europe, where North American LNG has been talked up by some as a panacea for the region’s supply concerns. But, as I’m sure many of you in this room already know, a few tens of bcm of LNG will not make much difference, given that OECD-Europe production continues to fall by similar quantities.

A broader range of measures are needed in Europe to ensure gas supplies long term, especially in light of recent conflict between Russia and Ukraine. While internal infrastructure is improving and the single market is on track, continued strong gas demand in Asia and competition for LNG mean that new volumes will be hard to come by in the case of supply disruption.



Europe should facilitate domestic production to offset declining European output, and it should have a strategic engagement with producers. Of course this should be seen as a complementary measure rather than substitution of efforts to improve energy efficiency and maintain a diversification of the primary energy mix.

Now I will turn to oil, drawing on our Medium-Term Oil Market Report, which also came out in June.

Let me start with the supply side, where we have seen instability in some key producer countries lately, especially Iraq and Libya. There has been little market reaction thus far primarily because disruptions have been minimal or offset. However, the IEA continues to watch developments very closely.

That said, the big supply story has been the unprecedented production growth in recent years in North America, driven by the United States which is now the world's number one aggregate producer of oil liquids. The country is already a significant exporter of refined products, and the first condensate exports were recently approved to go to Asia. Further exports remain a hotly debated topic in the United States.

Many question how long the upward swing in US light tight oil production can last, but new unconventional oil supply may come from other regions sooner than previously anticipated. Canada, Russia and Argentina are leading the pack. And Chile this month signed an agreement to begin exploring its potential.

On the demand side, the world's appetite for oil will continue to increase, topping 99 million barrels per day in 2019, driven by fast-growing markets outside of the OECD.

Here, too, demand growth is led by China, but also by other non-OECD countries in Asia.

We expect to see Asian imports surge by 16% to 22 million barrels per day by 2020, with the region then accounting for around 65% of the international crude market.

So, like with gas, we see oil demand and supply undergoing major shifts in the medium term.

But that is just the start of changes to energy demand and security. Because we at the IEA see two very big challenges.

First, that growth in energy demand from emerging economies is making up for OECD countries, where demand is actually falling. Why? Some factors are sustained high prices and concerns about security of supply. But those are hardly new.

No, the big changes are part of a phenomenon occurring as demand transforms towards the second half of this decade. Fuel-switching from oil, tightening environmental regulations and efficiency gains are all working to undermine the demand impact of economic and population growth, slowing demand growth.

This is most pronounced in OECD countries now, but it is an increasingly global phenomenon.

Thus, while peak oil demand outside of the OECD may be years away, we could see a peak in the rate of global growth of oil demand within the next five years.

Then there is the elephant in the room: long term, oil and gas production may have to taper off regardless of demand. That's because we need a sustainable as well as secure energy policy.

The IEA flagship publication World Energy Outlook makes clear that no more than one-third of proven reserves of fossil fuels can be consumed in the current manner before 2050 if the world is to limit average global temperature increase to no more than 2 degrees.

But a solution the WEO offers is something Norway has taken a significant lead in: carbon capture and storage. IEA scenarios to limit climate change all call for significant investment in, and implementation of, CCS. As long as fossil fuels and carbon-intensive industries play dominant roles in our economies, there simply is no credible long-term climate-friendly scenario without CCS.

With the Sleipner, Snøhvit and Mongstad projects, Norway has been showing world-class leadership in CCS for more than 15 years.

But the IEA does not see CCS as just a way to limit global warming. CCS can also be a way to more effectively develop fossil fuel reserves. Later this year, we will publish an in-depth look



at how carbon capture can be part of enhanced oil recovery, or EOR: this win-win process uses the captured CO₂ to squeeze out more oil or gas from deposits. I can't reveal much more now, but watch this space, because we will show how EOR can become a cost-effective way to limit climate change while providing more supply of the fossil fuels that the IEA sees as a significant part of the energy mix for decades to come.

Besides addressing the potential of EOR, the report will detail the investment necessary to develop it. But EOR is just a part of the significant investment needed overall for the oil and gas industry to keep providing the energy security the whole world relies on.

Our World Energy Investment Outlook – an already-released special chapter of our World Energy Outlook coming in November – estimates that upstream oil and gas spending must increase by a quarter to more than USD 850 billion per year in 2035.

What is particularly striking is that the bulk of that increase is to replace depletion of existing fields, where output will decline by more than half in the next two decades. Indeed, depletion is accelerating in almost every producing region. If this investment, does not take place, supply will shrink and we will no longer be able to meet existing demand, never mind demand growth.

So without CCS we cannot use more than one-third of the proven reserves in the world without endangering the climate, and thus large elements of our economies, including many of our energy operations. And without adequate upstream investment, potentially including EOR, we have no security of supply.

To encourage investment in both spheres, governments must play an important role. For supply growth, I cannot overemphasise the importance of governments' ensuring a stable, consistent policy framework for energy investment. And governments can ease the first steps in developing the CCS required to use that supply sustainably, especially by supporting pilot and demonstration projects.

Earlier this morning, I noted that many of us would like more certainty. But one certainty we do not want is the grim future if we do invest in these two prerequisites for a secure and sustainable energy future.

In closing, ONS has gathered us here to give us the opportunity to identify sources of uncertainty and find solutions. I've listed the challenges the IEA sees. Now let me start the discussion by asking, from your point of view, what are the top priorities vis-à-vis a secure and sustainable energy future? ■

© IEA/OECD, 2014

“The IEA flagship publication World Energy Outlook makes clear that no more than one-third of proven reserves of fossil fuels can be consumed in the current manner before 2050 if the world is to limit average global temperature increase to no more than 2 degrees.”



ISIS Could be Catalyst to Bring Saudi and Iran Closer Together

Raghida Dergham, Al Hayat Newspaper

THE EVENTS in Iraq this week may represent the entryway to a new approach in Saudi-Iranian ties, with the removal of the obstacle represented by Nouri al-Maliki, and the deal to appoint Haider Abadi as prime minister to form a consensus, non-exclusionary government in Iraq. This is an important step that opens up the possibility of Iraq serving as a gateway to broader agreements in Iraq, but also to regional agreements, specifically as regards Saudi-Iranian relations. But this is one step rather than a comprehensive strategy to overturn the state of this bilateral relationship. The path to that is long, and mutual trust will not be borne suddenly out of the Iraqi womb as soon as the Maliki obstacle is removed or an agreement is reached to fight the Islamic State in Iraq and Syria (ISIS) and its terrorism. It is also hoped that events in Iraq over the past few weeks, from ISIS's onslaught to Maliki's theatrics, are not part of a tactical ploy by a certain party or a group of parties. Tactics do not amount to a strategy after all, and are sometimes deliberately deceptive, using temporary surprises while continuing preparations to revive the original strategy. Instead, it is hoped that events in Iraq would lead to a new beginning for Iraq itself to emerge out of the hegemony of this side or the grip of that side, and proceed toward healthy federalism and not necessarily a confederation that would be based on partition. There are indications that the Iraqi events could bring about a positive change in regional and international understandings for a variety of reasons. So far, whether temporarily or whether there are indications of its sustainability, moderation is climbing into a new position, after having been trampled before by extremist movements and regimes with external help, especially from the United States, segments in which have supported both the Shiite theocracy in Iran and the Muslim Brotherhood and its theocratic project for the Sunnis out of Egypt.

There has been a lot of fascination with ISIS for several months now, particularly when ISIS appeared to have the momentum and the element of surprise while the Iraqi army shockingly retreated before its advance in a way that remains quite mysterious in its features, background, and logic. There are many theories regarding the identity of ISIS and of those behind it. One theory considers it an infernal combination of a group of intelligence services from multiple countries, from the Middle East and Western and Eastern powers. Another theory holds that it is an Iranian instrument to spread chaos as part of reinforcing the need for Iranian control over Iraq to control the

“If the rise of moderation within Iran is a serious development at the decision of the supreme leader, rather than a tactic based on the distribution of roles, the events in Iraq will prove to be extremely important, because they would be indicative of the start of a new Iranian approach, and also a markedly different page in Iranian-Saudi relations.”

situation and deter extremist terrorism there. And of course, there is the theory that considers ISIS to be the making of Sunni Salafism and Wahhabism with support from Qatari and Saudi families and parties, with a view to confront Iran and its allies using the language of “fire for fire” in Iraq, Syria, and Lebanon.

In the view of some, ISIS resembles the character of Rajeh in the Fairuz play, that is, a fictional character that only exists in the imaginations of those intimidated by him, making it a reality. But the reality left behind by ISIS, with its atrocities, brutal violence, and overt terrorism makes it a reality rather than an illusion.

The discussion also focuses on whether ISIS is a transient phenomenon – in the sense that, thanks to its appalling cruelty, it would not be able to survive because it lacks a support base on the long run – or whether it is the product of a support base that it already has in Iraq, Syria, and Lebanon in the context of fighting cruelty with cruelty, extremism with extremism, and bullying with bullying in the same measure or more.

ISIS is a combination of the two in terms of the support base that helped it take off and made it the terrifying catalyst it is today, but also in terms of its non-sustainability because it would not be able to keep its support base after causing the shock it has caused.

Perhaps history will note later what some now only whisper, that ISIS is a necessary evil as a “correction” of Iran’s excessive domination over Iraq, the fate of Syria, and the fate of Lebanon. Perhaps history will also note that ISIS thwarted the Iranian project, supported by the neocons in the Bush administration, dubbed the Shiite Crescent, by reshaping the Iraq-Syrian border along Sunni lines instead of Shiite-centric contiguity. But history will not forgive ISIS and its supporters or sympathizers for the atrocities against Christians, Yezidis, Kurds, Shiites, and other minorities. Certainly, the moderation brought to the fore by ISIS’s extremist brutality will not prevail if its popular base fails to tell ISIS firmly that it will not be a nurturing environment for it.

ISIS’s crimes has dwarfed the terrorism of others and overshadowed the crimes of others. ISIS is now the new focal point of counterterrorism, while at the same time becoming, as a done deal, a major catalyst in reviving Sunni moderation and rallying Sunnis from Iraq to Lebanon with a Saudi decision.

In Iraq, both ISIS and former Prime

Minister Nouri al-Maliki have succeeded in rallying opponents to agree to remove them from the Iraqi scene. The American, Saudi, Iranian, and European leaderships all agreed to get rid of the two threats, with important Iraqi attitudes voiced against the two. Perhaps this inadvertently contributed to strengthening moderation against extremism, not only in Iraq, but also in the battle taking place within Iran between the hardliners led by Qassem Soleimani and the Revolutionary Guard, and the moderate camp led by President Hassan Rohani.

Currently, Soleimani’s retreat and Rohani’s rise are clear through the stances expressed by the Supreme Leader Ayatollah Khamenei, who has supported Abadi as prime minister of Iraq and made it clear that Maliki had to step down. This was a blow to Soleimani, who clung to Maliki and who wanted to take advantage of the chaos unleashed by ISIS in Iraq to impose Iraq’s need for Maliki. But it is not clear whether this is all part of a tactic and distribution of roles as Ayatollah Khamenei has ordained, or whether it was a serious retreat by the hardliners controlled by Soleimani’s faction at the behest of Ayatollah Khamenei, as is being said.

If the rise of moderation within Iran is a serious development at the decision of the supreme leader, rather than a tactic based on the distribution of roles, the events in Iraq will prove to be extremely important, because they would be indicative of the start of a new Iranian approach, and also a markedly different page in Iranian-Saudi relations.

The Saudi leadership has adopted moderation as the theme of the momentum of its new policies, which have seen grants being given to counterterrorism efforts and aid to boost moderation among Sunnis. Saudi Arabia is more willing to hold dialogue with the Iranian leadership in the context of reinforcing moderation, especially if the Islamic Republic of Iran acts like a state rather than a revolution.

ISIS, like al-Qaeda and similar groups, is a threat not only to Saudi Arabia, but also to Sunnis as a whole. But of course, there is a split in the ranks of Saudi decision makers between those who believe that there is no alternative to the policy of “fire for fire” to impose a new fait accompli to force the other side to concede and adapt, and those who believe that adopting moderation as a policy is the best course to achieve goals.

Today, it seems that there are signs for a Saudi role that is different from the Saudi

role allied to Pakistan and the United States in manufacturing jihadists in Afghanistan thirty years ago to defeat Soviet communism. Mobilizing fighters from everywhere for jihad, by brainwashing them at the hands of the CIA, created a monster that soon went out of control.

It might be said that were it not for ISIS’s transformation into a monster that terrorized everyone, Sunni moderation would not have been revived, and neither would stopping Shiite extremism have been possible. Hence, this vindicates those who insisted on the “fire for fire” approach, and who insisted on keeping this option ready should the moderate approach fail.

Today, it seems that the official Saudi decision is to raise the banner of counterterrorism and combatting extremism high by taking measures and politically calculated stances as well.

The \$100 million grant to the United Nations to mobilize global support for combatting terrorism is important not only in terms of its financial and media significance, but also in terms of its political implications, especially in the context of Syria.

Syrian President Bashar al-Assad has set himself as a spearhead in the fight against Sunni terrorism, and in the protection of minorities from ISIS and similar groups, even though it was he who had released ISIS members from Syrian prisons to undermine the Syrian opposition and its reputation, before selling himself to the United States, Russia, and Western powers as the go-to man for the fight against terror.

The Saudi grant to the United Nations carried a political message to pull the rug from under the feet of the regime in Damascus, in order not to allow him to monopolize the scene to claim that he alone is fighting Sunni terrorism. Furthermore, the Saudi government’s financing of counterterrorism activities by the United Nations, together with other grants to assist its efforts in Iraq, is part of its comprehensive strategy based on new engagement with the international organization and international cooperation in the area of counterterrorism, as well as in helping Iraq recover provided it stop excluding Sunnis and ignoring their rights at the behest of Tehran.

In Lebanon, the Saudi leadership rushed to make a stand against ISIS to bolster Sunni moderation, granting Lebanon \$1 billion carried by former Prime Minister Saad Hariri, who returned to Lebanon as leader



of Sunni moderation, prepared to make agreements.

With Hariri’s return to Lebanon and the restoration of his moderate Sunni leadership, and with Maliki’s departure from power in Iraq taking with him his exclusion, sectarianism, and extremism, there is room to be optimistic about a new approach by the two countries and possible new understandings between the Saudi and Iranian leaderships, focusing on moderation to combat extremism.

Syria remains a thorn in the side of any possible understandings, because it remains exclusively in the hands of the Iranian Revolutionary Guard. This of course will affect Lebanon, even though Hezbollah there listens to the supreme guide and has its own Lebanese calculations, and is not just a proxy of the Revolutionary Guard despite their close relationship.

Syria is not exclusively an Iranian-Saudi issue, but it also involves Russia, Qatar, and European powers in varying degrees and dimensions.

“The events in Iraq are an opportunity for the U.S. president to re-sort the relationship with both Saudi Arabia and Iran, in the direction of brokering understandings and supporting moderation in earnest.”



As concerns Russia, the visit conducted by the Egyptian President Abdel Fattah Sisi to Russian President Vladimir Putin to forge closer ties was remarkable. Sisi sought arms deals using Saudi and Emirati funds, in addition to giving Russia access to the new Suez Canal project. Egypt represents one of the outlets of Saudi rapprochement with Russia, just like Iraq represents a channel for Saudi rapprochement with Iran.

At the American level, President Barack seems willing to move in small steps, which appeared as though they are strictly meant to support Kurds, whether by bombing ISIS positions or by considering the possibility of expanding the U.S. role in Iraq through the use of drones. Thus, Obama appeared willing to move against radical terrorism as represented by ISIS's crimes, in conjunction with the consensus over removing Maliki from power, perhaps in order not to appear to be siding with Iran in Iraq if Obama fails to put pressure to remove Maliki.

Obama will not drag America into direct a battle with ISIS or other belligerents, because he is determined not to get involved in the wars of others in accordance with the wishes of the

American public, as he has determined them to be.

The events in Iraq are an opportunity for the U.S. president to re-sort the relationship with both Saudi Arabia and Iran, in the direction of brokering understandings and supporting moderation in earnest. This way, Obama can cast off the reputation for supporting extremism with the Muslim Brotherhood in Egypt and by appeasing Iran in order to secure a nuclear deal with Tehran as his legacy.

Nuclear negotiations with Iran have stalled, and may not lead to the outcome desired by Barack Obama, because of the huge gap between what Tehran wants and what the Obama administration can live with and can sell to the Congress in Washington.

For this reason, it might be worthwhile for the U.S. president to draw a parallel path to his focus on appeasing Tehran, using the events in Iraq as a foothold to launch a new image for himself that would establish him as a serious and firm supporter of moderate powers, and one who can contribute to writing a new page for the Middle East. ■

This article was published in Al Hayat newspaper in August 2014.

PLATTS MARKET DATA

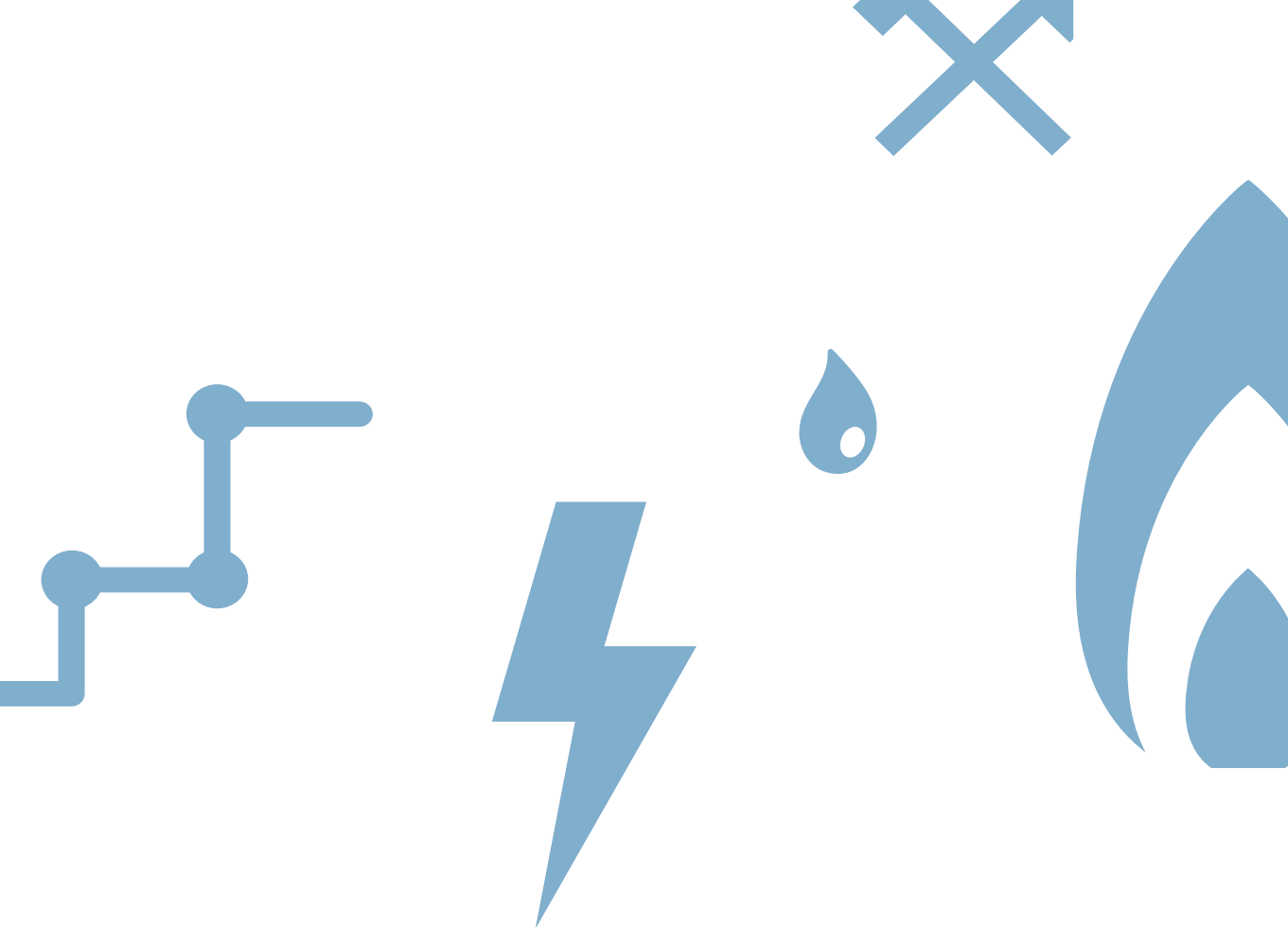
Delivering you a competitive advantage is in our DNA

You need an innate competitiveness to thrive in the rapidly evolving global energy and commodity markets. But when even the smallest change can have the biggest impact, how can you be sure this natural competitiveness always delivers genuine advantage?

Platts Market Data provides the raw numbers you need to observe your surroundings, think on your feet and remain nimble. Together with Platts benchmark price assessments, which are widely recognized as industry standard, it helps you:

- operate at price levels in sync with other market participants
- develop inherently strong pricing strategies
- meet regulatory requirements

To start turning our core strength into your next opportunity, simply download your complimentary Platts Market Data at www.platts.com/marketdata



E.ON Global Commodities

Moving Energy? That's business as usual.

We're the wholesale energy trading business of E.ON, one of the world's largest investor-owned power and gas companies. Our experts create value for E.ON and for our trading partners by managing commodity price risks, providing asset optimization services, and identifying and capturing opportunities in the global energy system.

At the heart of global energy markets

eon.com

e-on