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Energy Outlook

Post Easy Oil: A View from the Gulf

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CONTENT

3 **Foreword**
by H.E. Mohamed Bin Dhaen Al Hamli, UAE Ministry of Energy

IOC-NOC PARTNERSHIP FOR POST EASY OIL ERA

4 **National Oil Companies and International Oil Companies Should Form Technology Alliances to Meet Future Energy Demand**
by H.E. Abdullah Bin Hamad Al-Attiyah, Qatar

9 **Energy Frontiers Will Only be Conquered Through New Partnerships & Collaborations**
by Jon Ferrier, Maersk Oil

12 **The Age of Easy Oil is Coming to an End, But There's Still Lots More of it to Develop**
by H.E. Mohamed Bin Dhaen Al Hamli, UAE Ministry of Energy

THE AGE OF TECHNOLOGY: THIRD GENERATION RECOVERY

17 **Enhanced Oil Recovery to Lead the Way in Post Easy Oil Era**
by Stuart Walley, Senergy

21 **OPEC Sees Technology as Gateway to Post Easy Oil Era**
by H.E. Abdalla Salem El-Badri, OPEC

25 **Maersk Oil unlocks potential with TriGen technology**
by Bob Alford, Maersk Oil

OUTLOOK

26 **Another Year of $100+ Oil? – Be Careful What You Ask For!**
by Sean Evers, Gulf Intelligence

29 **Middle East Gas Producers Should Look to Underground Gas Storage to Bolster Security of Supply and Optimize Gas Supplies**
By Dr Axel M. Wietfeld, E.ON Földgáz Storage, a unit of the E.ON AG

33 **Chinese Energy Companies Should Compete Globally on Quality as Well as Cost**
by James McCallum, Senergy

37 **Feature Interview: H.E. Abdullah Bin Hamad Al-Attiyah – "Don't believe Forecasters... Be Brave!"**

THE OUTLOOK for the international energy industry in 2012 is clouded by uncertainty with ongoing concerns about economic growth, energy consumption and global financial stability.

Notwithstanding these issues, the United Arab Emirates continues to invest heavily in oil and gas production. Over the years, oil and gas has become more challenging to produce. The UAE has embraced this challenge and has been developing increasingly complex fields such as ultra-sour gas reservoirs among others.

More than ever, the UAE is looking for partnerships with international companies - oil majors, service companies and technology suppliers – that are able to help the Nation develop new projects, which will enable it to continue supplying oil and gas to international markets.

His Excellency Mohamed Bin Dhaen Al Hamli
United Arab Emirates Minister of Energy

National Oil Companies and International Oil Companies Should Form Technology Alliances to Meet Future Energy Demand

By H.E. Abdullah bin Hamad Al-Attiyah

FIRST LET me share with you a confidence from my long experience in the industry: there never was any easy oil or easy natural gas. The world is entering again in turbulent times regarding the current macroeconomic imbalances in Europe and the U.S. Despite these threats to global economic growth, energy demand will continue to grow rapidly under the leadership of the emerging economies, especially China and India. According to the International Energy Agency, energy demand in Asia will double by 2035 while consumption in the OECD will remain almost constant. Non-OECD countries lead the growth in energy consumption.

> "In the areas where no direct competition exists, technology alliances would help the oil and gas industry to reach our common goal of economic and social development."

Asia's rapid economic development is expected to outweigh energy efficiency resulting in an overall increase in energy demand. At the same time, even though hydrocarbons will remain the dominant source of energy, the energy mix will gradually shift away from oil and coal, while natural gas and renewable energies gain market share.

A global redesign of the world economy and particularly of the energy industry is at work.

The hydrocarbon industry must ensure that relevant investments are made throughout the value chain. More oil will be required to satisfy the aspirations of a growing middle class that seeks transport mobility. Similarly, more natural gas will be needed to meet expanding power generation and industrial activity.

To face these challenges, hydrocarbons producing countries must ensure that adequate investments are leveraged in productive capacity and appropriate investment are made in technologies to address complex oil and gas projects.

These investments will need to be made in a manner that is consistent with the global environmental concerns.

Regarding the investment challenge in expanding production capacity, if you follow the IEA outlook, close to $20 trillion will be needed in order to build the global oil and gas infrastructures required to meet the expected demand in 2035. On a standalone basis, the MENA region will be asked to invest over 100 billion dollars every year.

Energy investments are a long-term proposition, both in terms of the lead times involved in construction and in the life of the productive asset. Given this, it is vital that transparency exists in the market and that investors have sound information upon which to make decisions. Better data and forecasts will reduce disruptive energy price fluctuations -- this will ultimately benefit both producers and consumers of energy products.

As well, the closest cooperation between the many partners involved within these projects is essential. A close and loyal relationship between the national oil companies and the international oil companies are a requirement to ensure success in multi-billion dollar projects spreading over many years.

Future production levels will be determined by the investment decision we make in the present. As such we need to ensure that the industry has a stable business environment that will give them the confidence to make large scale investments.

THE SECOND key investment challenge will be to continue to develop and to apply modern technologies. Let me reference Qatar to explain my views regarding technological development.

As many of you will be aware, Qatar is an oil producing country but also the world's largest producer and exporter of LNG. Under the wise leadership of His Highness the Emir Sheikh Hamad bin Khalifa Al Thani, Qatar has achieved an incredible expansion in it LNG industry. These advances were accompanied with other equally important developments along the value chain of natural gas. Innovative technologies were used to scale the LNG trains, to design the largest LNG carriers as well as to build a unique GTL industry.

The completion of such large scale developments demonstrates that technology creation and implementation is an answer to the issues facing the energy industry. Such scale of production and scope of products have been possible through careful planning, wise innovative technologies implementation and timely partnerships with international investors. At the beginning, there was a stranded gas resource, at the end there was a world class player in the oil and gas industry.

Energy is the backbone of our modern society; however it is only through technology that we are able to extract its full benefits. In the areas where no direct competition exists, technology alliances would help the oil and gas industry to reach our common goal of economic and social development. To this end, scientific cooperation, education exchanges and joint ventures could all be used to further our common interests.

For example Texas A&M University in Qatar will enhance its current curriculum by a new Master's graduate program in Chemical Engineering. This program will not only train tomorrow's energy business leaders, but also develop original research programs in Doha. Such international co-operation is beneficial for Qatar and more widely for the global oil & gas industry.

Similarly, the Qatar Science and Technology Park now host large research programs with many major oil companies and service providers. Let's welcome opportunities to work internationally to take advantage of human ingenuity in the fields of energy and environment.

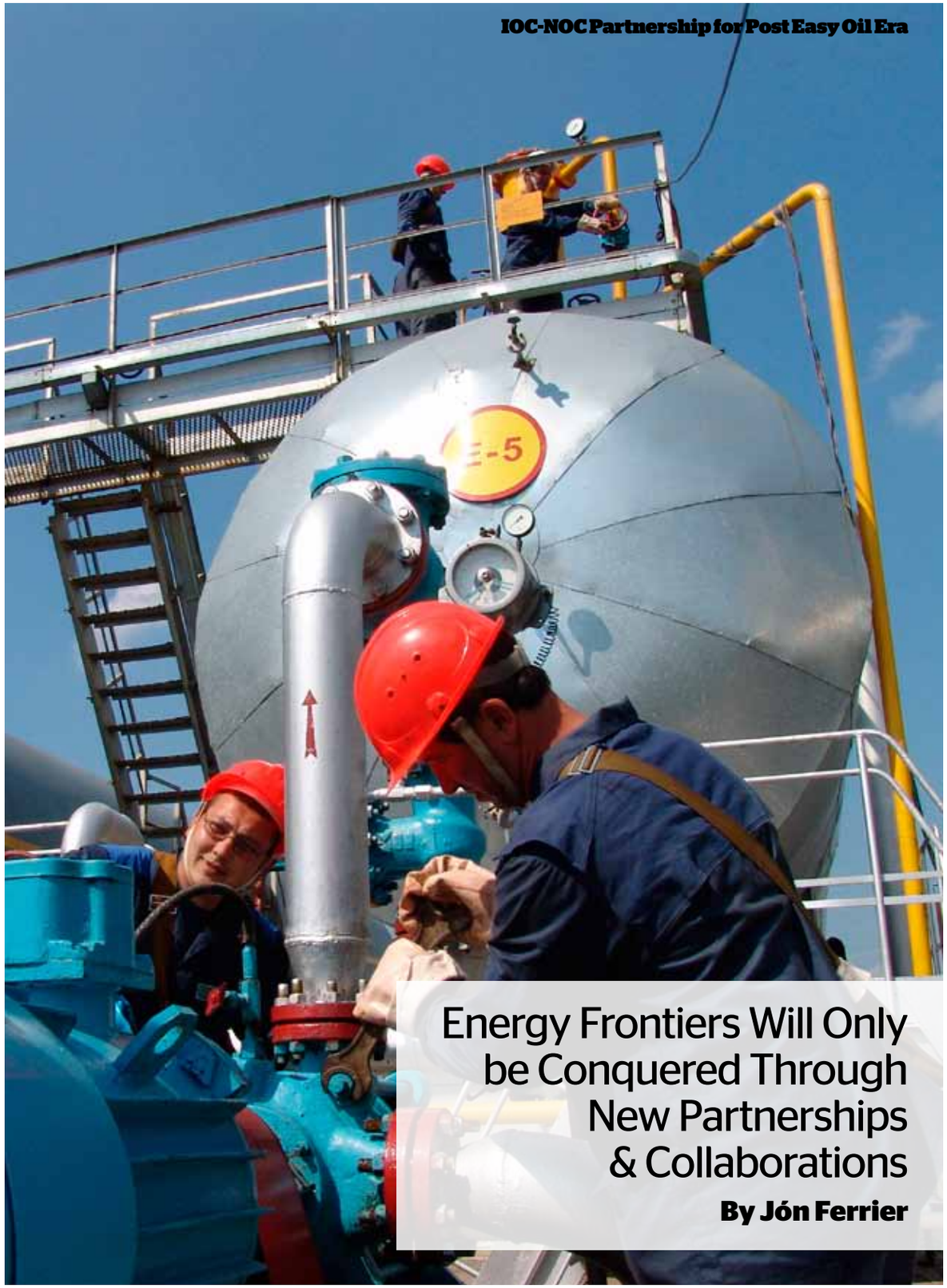
Furthermore, it is becoming increasingly important to develop technologies that enable us to meet our energy needs in a safe and environmentally responsible manner. In this area, like in many others, entrepreneurs and small companies have the potential to provide innovative solutions. They are the key to unlocking potential of an even more technology driven energy era.

After the COP 17 meetings in Durban, it has become apparent that considerable work remains to be done before any collective international response to climate change is agreed. Despite this, we are already seeing significant advances in increasing energy use efficiency and renewable energy technologies. This includes developing technologies that will allow us to mitigate greenhouse gas emissions and adapt to the impacts of climate change.

WHILE THESE developments will undoubtedly impact the global energy outlook on the long term, it remains clear that fossil fuels will continue to be the center piece of the energy equation for several decades to come.

I remain a firm believer of the robustness and resilience of the energy industry. The unprecedented rise of demand for energy can be met if we plan the right investments at the right time in a sustainable way.

H.E. Abdullah bin Hamad Al-Attiyah is President of the Administrative Control & Transparency Authority, Qatar, with the rank of Prime Minister, and was Qatar's former Minister of Energy and Industry for two decades.



Energy Frontiers Will Only be Conquered Through New Partnerships & Collaborations

By Jón Ferrier

"Why don't we all join forces and drum up more recruits to our industry."

WE IN the energy industry face a fundamental challenge – swim together or drown.

Collaborating and forming trusting relationships is becoming increasingly important, as new oil and gas projects assume new technological as well as commercial challenges.

Aside from navigating geopolitical complexities, we now find ourselves in an increasingly crowded market of a variety of national and international players. We all compete for a smaller number of opportunities to explore for oil and gas in more and more challenging areas.

Our safety and environmental records are now placed under the media spotlight, and operational regulations are being tightened all over the world. And we will soon face a crisis of the resource we value most – people – as retiring workers fail to be replaced by new talent in sufficient numbers.

It can seem like a bleak picture, as if our options are all becoming more and more constrained, but the one graph that keeps going up is demand for hydrocarbons.

This is exactly the right time to start working closer together, to collaborate more. It is only through trusting partnerships – with our peers and with governments – that we can go to new corners of the globe, explore previously impossible areas, develop the technology to access oil and gas thought to be inaccessible and win the fight for talent.

Industry partnerships with universities are particularly important, if we are to find the new talent we need to continue with our work. As the operational environment gets more challenging there is a need to revive our beliefs in technology and human innovation.

IN TEN YEARS' time about 30 percent of the oil industry workforce will retire, yet we are currently only recruiting about half of the newcomers to the industry that we need. This can mean that we will all be competing for the same young professionals.

But why don't we all join forces and drum up more recruits to our industry.

Why don't we work together to improve our reputation – which is that of a dirty backward industry on its way out. Why don't we show the outside world what it is like to fuel the world's economy, show potential recruits that to work with us is to overcome challenges using creative thinking, to venture into unexplored corners of the world, to be at the forefront of technological innovation, to meet an extraordinary array of people, to make an impact.

Maersk Oil has always sought out partnerships in its 50-year quest to grow.

The Danish firm began its life in 1962 as a very modest company with a very complicated task ahead – to unlock the oil and gas in the tight reservoirs of the Danish North Sea. It didn't do it alone. It worked with experienced partners and learnt from them, and in time developed the technologies needed to solve its technical challenges, which also paved the way for the internationalization of the company.

TODAY, IT is a midsized oil company active on six continents, operating some 700,000 barrels of oil equivalent per day.

It has the agility and nimbleness of an independent company to take quick decisions, act fast and execute projects on time and on budget with minimal bureaucracy. But with the financial might of the A. P. Moller – Maersk Group behind it the energy unit's investments are long-term.

Since the modest beginnings the wholly-owned subsidiary has spread its wings to operate in areas from Qatar to Brazil, from Angola to Greenland, Norway to Kazakhstan, the U.S. Gulf of Mexico to Algeria.

Maersk Oil's first foreign venture was the Al Shaheen offshore oil field in Qatar in 1992.

This was a field others had walked away from because of its complexity. It was deemed non-commercial, with very thin, low permeability carbonate reservoirs. Twenty years later, and after the latest $6 billion field development plan, Maersk Oil in partnership with Qatar Petroleum produced its one billionth barrel from Al Shaheen – now Qatar's largest offshore oil field.

The Levantine Basin of the Eastern Mediterranean, where a major new hydrocarbon province is now emerging, and where technical challenges of deep water exploration and production, as well as commercial and political factors, will need to be carefully managed through stable, collaborative and trusting partnerships to ensure success for all stakeholders involved.

This requires determination and long term commitment, both from the oil and gas industry and from the host governments.

Jón Ferrier, Head of Business Development, Strategy and Commercial at Maersk Oil.

The Age of Easy Oil is Coming to an End, But There's Still Lots More of it to Develop

By H.E. Mohamed bin Dhaen Al Hamli

THE NOC-IOC relationship is a recurring theme which is of paramount importance to the global oil industry in general and to the Middle East in particular.

History has shown that a healthy and balanced relationship between hydrocarbon resource-holders, represented by National Oil Companies, and International Oil Companies, provides the best possible framework for efficient oil and gas production.

Today, national oil companies have established an excellent working relationship with international oil companies who provide the technology and expertise required for optimum performance.

It is clear that the age of easy oil is coming to an end, it is equally clear thanks to the application of new technology, that the oil and gas industry has a very long life ahead of it.

Oil and gas might be more challenging to produce but there is still plenty of it in reservoirs, not just in this region but in other producing regions of the world also.

The significant number of new finds in recent years is evidence that regions such as West Africa and Brazil still have enormous potential. Large tracts of virgin land as well as many offshore areas have never been adequately explored for oil and gas and could contain appreciable reserves that would significantly prolong the age of oil.

Looking into the medium term future, energy demand shows no sign of abating.

OPEC's Reference Case Scenario anticipates primary energy demand to grow by 51% in the years to 2035. Fossil fuels, currently accounting for 87% of primary commercial energy supply, will still make up 82% of the global total by 2035.

Hydrocarbons will remain the energy source of choice, with the largest share for many years to come. However, by 2035 oil will have been overtaken by coal, which will represent 29% of total energy, as it does today, while oil's share falls from 34% to 28%. Even though its share of world total energy consumption might fall, no less than 110 million barrels of oil per day will be needed by 2035.

Gas use is expected to rise at a faster rate than either coal or oil, with its overall share of total energy rising from 23% to 25%.

For traditional hydrocarbons producers the ongoing challenge will be the need to invest heavily in capital-intensive projects such as enhanced oil recovery, which will be increasingly required to maintain production over the long term.

Improved technology, successful exploration and enhanced recovery have enabled the world to continually increase its resource base to levels well above past expectations. In a world where oil demand is set to increase, we cannot afford to leave 65-70% of proven reserves in the ground. The petroleum industry needs to allocate adequate resources to surmount this hurdle.

However, these investments will materialize only if price levels are sufficient to justify commercial production from complex reservoirs.

OPEC World Oil Outlook anticipates that the oil price during this decade will average $85 to $95 a barrel. Obviously, we cannot predict future oil prices with any certainty and experience shows that OPEC has little impact on oil prices, which are set in international oil markets. However, if oil prices do trade within this range over the next decade, it will provide an adequate economic incentive for producers such as the UAE to continue investing in long term sustainable production capacity.

Indeed, in recent years the UAE has invested heavily across the hydrocarbon value chain and these investments are continuing, be it in sour gas projects, new production facilities or refining and transportation.

In all these areas, international oil companies have a role to play. National Oil Companies should not, work in isolation when seeking to meet future challenges.

We recognize that sustainability is enhanced by close working relationships between National Oil Companies and International Oil Companies, which allow for a transfer of technology and exchange of experience. In the UAE's hydrocarbon industry, we work closely with international oil companies. By collaborating closely with them, we can gain access to the latest oilfield technology, while securing a high degree of technology transfer.

In addition, we attach great importance to long-term relationships with those companies that buy our oil and include many IOCs as well as important independent refiners. Many of our customers have been with us since the first production.

The UAE is fully committed to meeting the future challenges of the energy industry by continuing to invest in new projects, many of which involve the application of new cutting edge technologies. We will do this in collaboration with international oil companies.

We live in a time of uncertainty in the global economy. Oil and gas producers have a role to play in support of worldwide recovery, and that involves producing the energy required to fuel a resurgent economy. With the support of our international oil companies, we stand ready to do so, as we have always been.

> "National Oil Companies should not work in isolation when seeking to meet future challenges."

H.E. Mohamed Bin Dhaen Al Hamli
United Arab Emirates
Minister of Energy

Enhanced Oil Recovery to Lead the Way in Post Easy Oil Era

By Stuart Walley

THEY SAY you can always tell the crest of an economic boom is when the most extravagant projects are undertaken – Dubai built the world's tallest tower as the property bubble was bursting.

Brent crude oil averaged above $100 a barrel last year for the first time ever, blessing Saudi Arabia with daily oil revenues of about $1 billion.

But could this be a crest of the wave signaling the end of the easy-oil era?

For much of the 20th century, the Gulf has been blessed with a steady flow of low-cost oil production, thanks to its abundance of conventional reservoirs – in parts of Iraq crude oil has been known to bubble to the surface by itself without any technical assistance.

But as a relatively mature oil producing region, there is renewed focus on improving recovery from many of the Middle East's largest fields. The world's largest reservoirs, such as Kuwait's Burgan and Saudi Arabia's giant Ghawar, have pumped more than half their recoverable reserves after 50 years - the point at which production traditionally begins to decline.

When Oman faced huge production declines in the past decade, it turned to enhanced oil recovery (EOR) technology to reverse the collapse and now these techniques are responsible for harvesting about a third of the country's production – which amounts to salvaging about $30 million a day in oil revenue at current prices.

The state-owned Saudi Aramco is currently evaluating the use of carbon dioxide injection technology to avert production declines and plans a series of pilot programmes in mature oil fields such as Ghawar, the world's largest, by next year

The US Geological Survey estimates there are some three trillion barrels of heavy oil in the world, about 100 years of global consumption at current levels. The catch: only a fraction of it - about 400 billion barrels – can be recovered using existing technology. New techniques are required to unlock more.

One third of the heavy crude oil reserves are known to be located in the Middle East, but until now much of it has been left undeveloped because there has been so much easily accessible oil to develop. But with ageing reservoirs and prices exceeding $100 per barrel, the economics of using EOR to go after heavy oil extraction become more attractive.

Global EOR spending has leapt from a standing start over the past decade to almost $100bn and is expected to continue growing rapidly with the support of government investment as we have seen in Oman, the UAE and now Saudi Arabia.

In the U.S., the department of energy has estimated full use of EOR technology in U.S. oilfields could generate an additional 240 billion barrels of recoverable resources, which at current oil prices amounts to about $24 trillion, almost 50 per cent more than the national debt.

EOR is a series of techniques used to increase the amount of oil that can be extracted from any particular reservoir. During its life cycle, an oilfield goes through a number of distinct phases where various techniques are employed to maintain crude oil production at plateau levels – primary, secondary and tertiary recovery.

> "EOR is a series of techniques used to increase the amount of oil that can be extracted from any particular reservoir."

Arab oil producers are entering the tertiary phase of production that requires techniques such as injecting steam, gas or chemicals into a reservoir to make the oil thinner and easier to extract from tight rock formations.

EOR played a significant role in salvaging the Omani oil industry, which was facing significant production declines – between 2001 and 2007 Oman's oil production fell by 27 per cent. But by 2009, due mostly to EOR projects, oil production had increased by 17 per cent.

In total, four major Omani projects are planned to start this year, with at least another two expected to start soon after. Oman is producing between 250,000 and 300,000 barrels of oil per day using EOR methods, about a third of the country's total output.

In the UAE, the Abu Dhabi Company for Onshore Oil Operations (Adco) initiated an EOR project in November 2009 to test the injection of carbon dioxide into the North-East Bab field, a complex carbonate reservoir. Adco's main objectives for utilising carbon dioxide EOR techniques are to significantly increase recoverable reserves, sustain long-term production and maximise ultimate recovery.

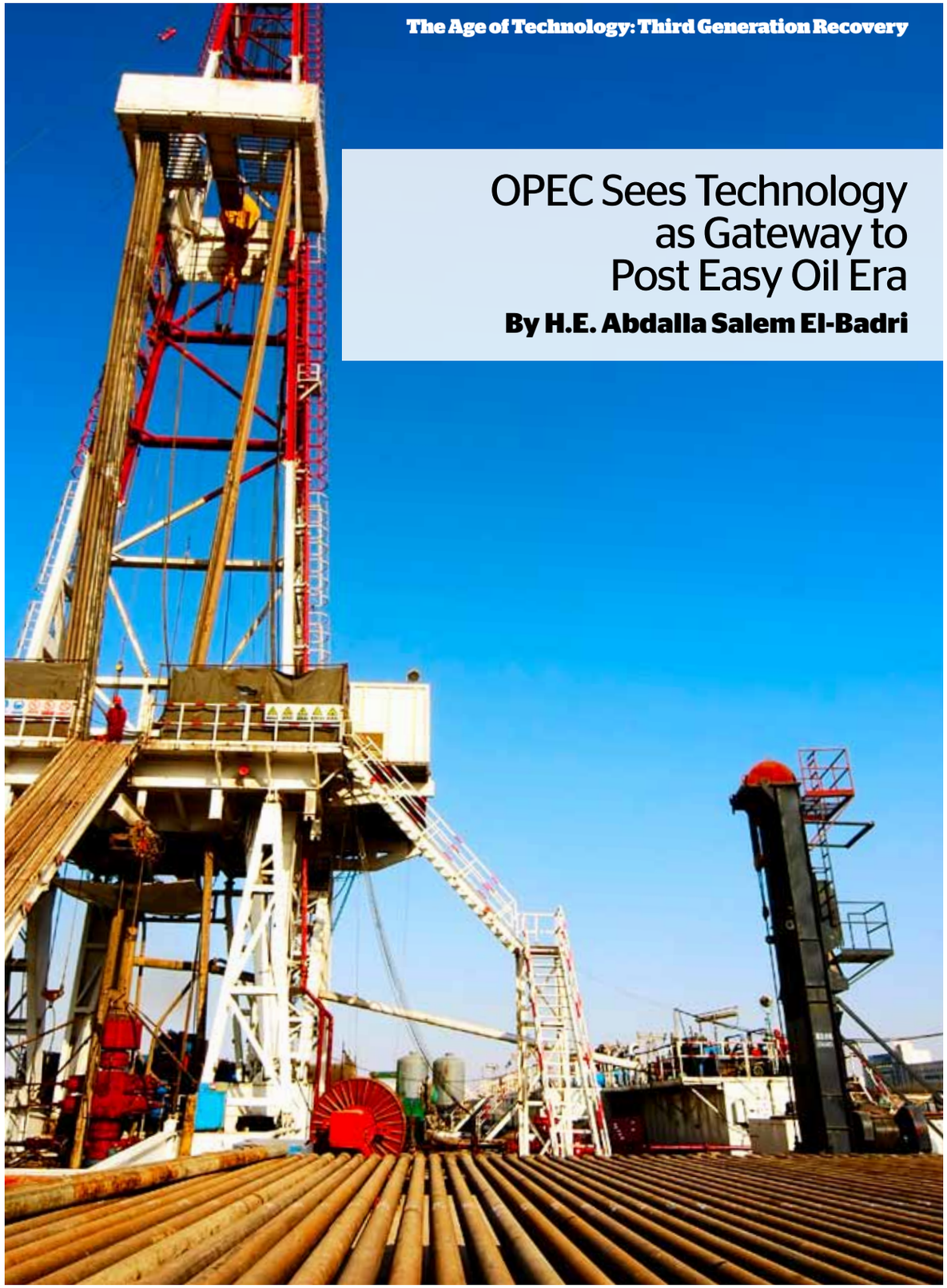
The high oil price has resulted in significant investment in EOR methods globally, and has already borne fruit in arresting the decline in U.S. oil production.

EOR methods, along with advanced technologies designed to extract unconventional oil and gas, could ultimately significantly increase the supply of oil around the world, forcing many Middle Eastern oil exporters to rethink their strategies.

Stuart Walley, Regional Manager for Senergy in the Middle East and India.

OPEC Sees Technology as Gateway to Post Easy Oil Era

By H.E. Abdalla Salem El-Badri



TECHNOLOGY IS at the heart of all the great achievements in the oil and gas industry.

It has profoundly changed the nature of our industries and dramatically transformed the supply geography worldwide. For more than a century, new technologies have changed the way reserves are identified, developed and produced, leading to a massive growth in reserves and supply.

In terms of exploration, technology has improved the quantity and quality of information available about different geological structures.

This has enhanced the likelihood of finding oil and gas, and has extended the reach of surveyors, geologists and explorers into new frontier areas. Today many new tools allow us to find deeper and harder-to-reach fields.

Part of this has been the result of improvements to sub-surface imaging of deep and complex horizons. Enhanced 3D, for example, lets us see through thick salt layers. This technology has enabled important discoveries like those off the coast of Brazil.

Other new technologies include cable-free land seismic data acquisition, which can be especially useful since it can reduce the costs of on-land seismic data collection.

Technology has also been a game-changer in terms of drilling and production.

The successful application of new technologies has literally extended the reach of the industry's drills to "frontier fields", allowing drilling and production in harsh environments, and remote and challenging locations.

And new technologies have helped transform resources once thought unconventional into conventional ones. Remember that only forty years ago, all offshore oil was considered unconventional. Today, this portion of total global oil supply accounts for 30%.

For example, flexible drills and directional, long-reach drilling have enabled the industry to access resources in the frozen regions of Russia, the deep waters of the Gulf of Mexico and difficult terrain across the Middle East.

In addition, today we have the example of "tight" oil and shale gas, which can now be accessed using hydraulic fracturing. This technology has already spread to other countries like Argentina, China and Poland, increasingly making frontier oil and gas commercially available.

Technological changes have also improved recovery rates and extended the life of existing oil fields. With new technology, old fields - or those considered to be depleted - have been brought back to life.

The giant Duri oil field in Indonesia, for example, originally discovered in 1941, was able to boost production from 65,000 b/d to 200,000 b/d in the 1980s by relying on the new technology of injecting pressurized steam underground.

Of course, today, such techniques - using water, carbon dioxide or other chemicals to improve recovery of oil - are widespread.

Other new technologies - such as time-lapse or 4D seismic monitoring - have been important tools for enhanced mapping and improved monitoring of fields during production.

These have contributed directly to improved recovery rates.

If new tools and further technological changes can increase recovery rates by several percentage points more, we can assume that we will see more oil - which, combined with new discoveries, will result in tremendous endowment growth and additional supply to consumers.

The impact of technological change on reserve growth and the world's resource base has also been most impressive. This is expected to continue into the future.

OPEC member countries and their reserves have benefitted greatly from technological innovation over the years. Member Countries now account for the majority of world crude oil reserves - around 80%. More importantly, they now have 60% of the world's original endowment and have produced 20% of this amount.

NON-OPEC countries, too, have also witnessed growth in total endowments. The non-OPEC region has 40% of the world's original endowment and has produced more than 40% of this amount.

Looking globally, we see similar growth. Estimates of total original endowments suggest that more than 30% of the world's resource base still remains to be turned into proven reserves - either through reserve growth or future discoveries. And total original recoverable resources were recently estimated at 3.5 trillion barrels, according to OPEC's World Oil Outlook.

Thus, by helping to expand the global resource base of oil and gas, technology has contributed directly to a strengthening of security of supply worldwide. I should note that technology has also helped reduce the drilling and production costs of oil and gas activities, reducing capital needs and minimizing the risks associated with upstream activities.

Technology has thus not only been a game-changer but also a cost-cutter.

The early development and deployment of new technologies has also helped reduce the industry's environmental footprint. Cleaner oil and gas storage systems, and the use of new transportation materials, have reduced environmental risks.

New technologies have helped refineries around the world produce more environmentally-friendly products.

One proven scientific innovation is Carbon Capture and Storage.

Although this technology still poses challenges in terms of costs and efficiency, further advances can make it commercially viable - especially if it is combined with targeted R&D efforts and new technological solutions. Thus, innovations in science and technology mean that fossil fuels can be friendly to the environment.

Science, technology and innovation are the key to the continued success of the oil and gas industries. With further innovation, technology may yet help expand oil's role as the world's most affordable and most convenient source of energy.

In-depth scientific and technical research has played a vital role in our industries. It has consistently helped address all sorts of challenges in exploration, development and production, in efforts to protect the environment and to extend the reach of the industry and reduce costs.

> "Technology has thus not only been a game-changer but also a cost-cutter."

Technology offers us a way forward in all these areas.

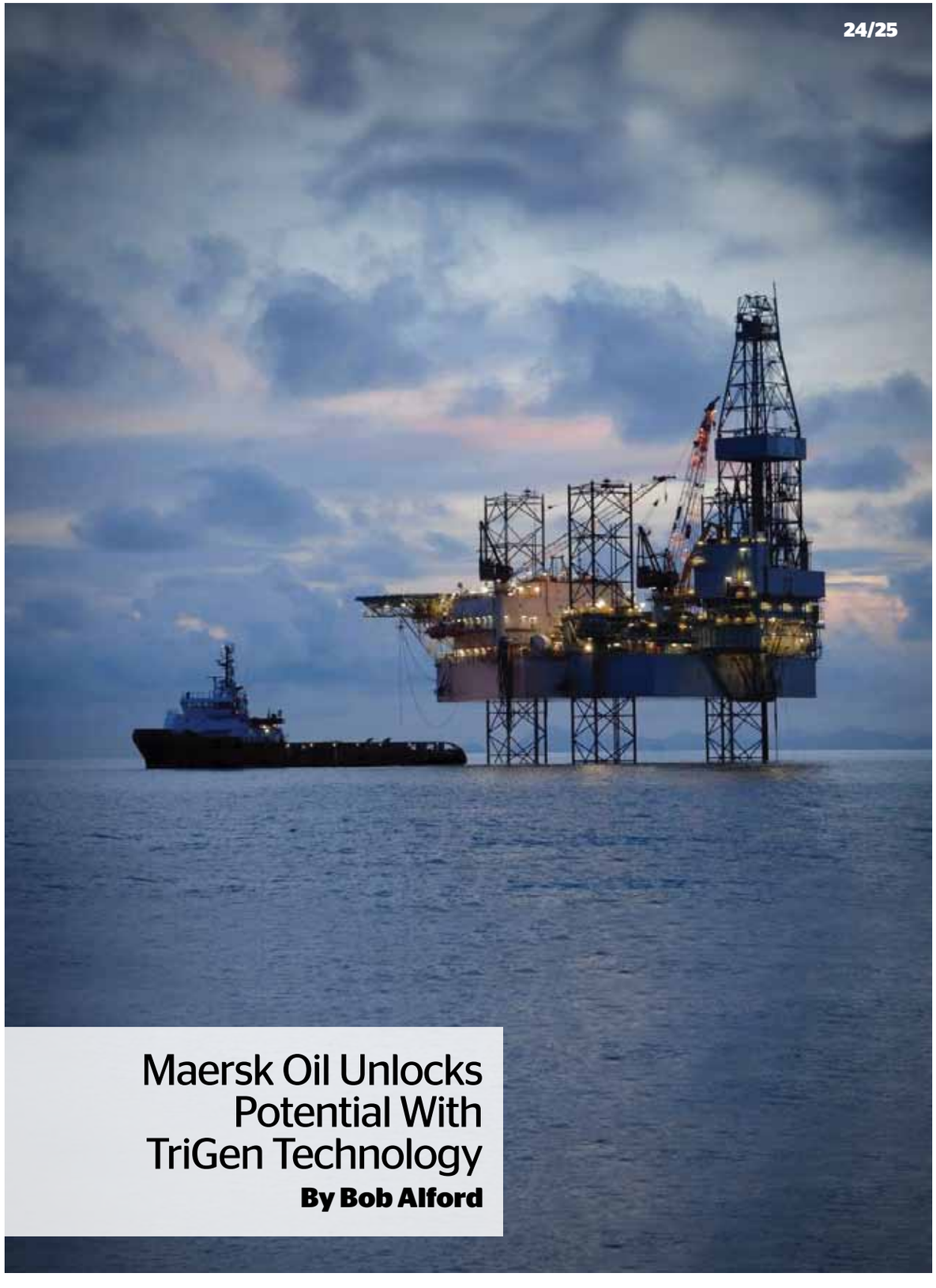
However, this is not just a matter of going out and buying new technology. We need skilled workers who know how to best use this technology. But the majority of our work-force is aging and growing scarce. This remains one of the most serious challenges.

We should also remember that given the long-term nature of our industries, R&D efforts require ongoing, timely investments. While we should pay close attention to crude prices in the short-term, we should also be aware of the policies and technological changes in consuming countries that could impact demand levels in the long-term.

This is the delicate, dual nature of the challenge before us all.

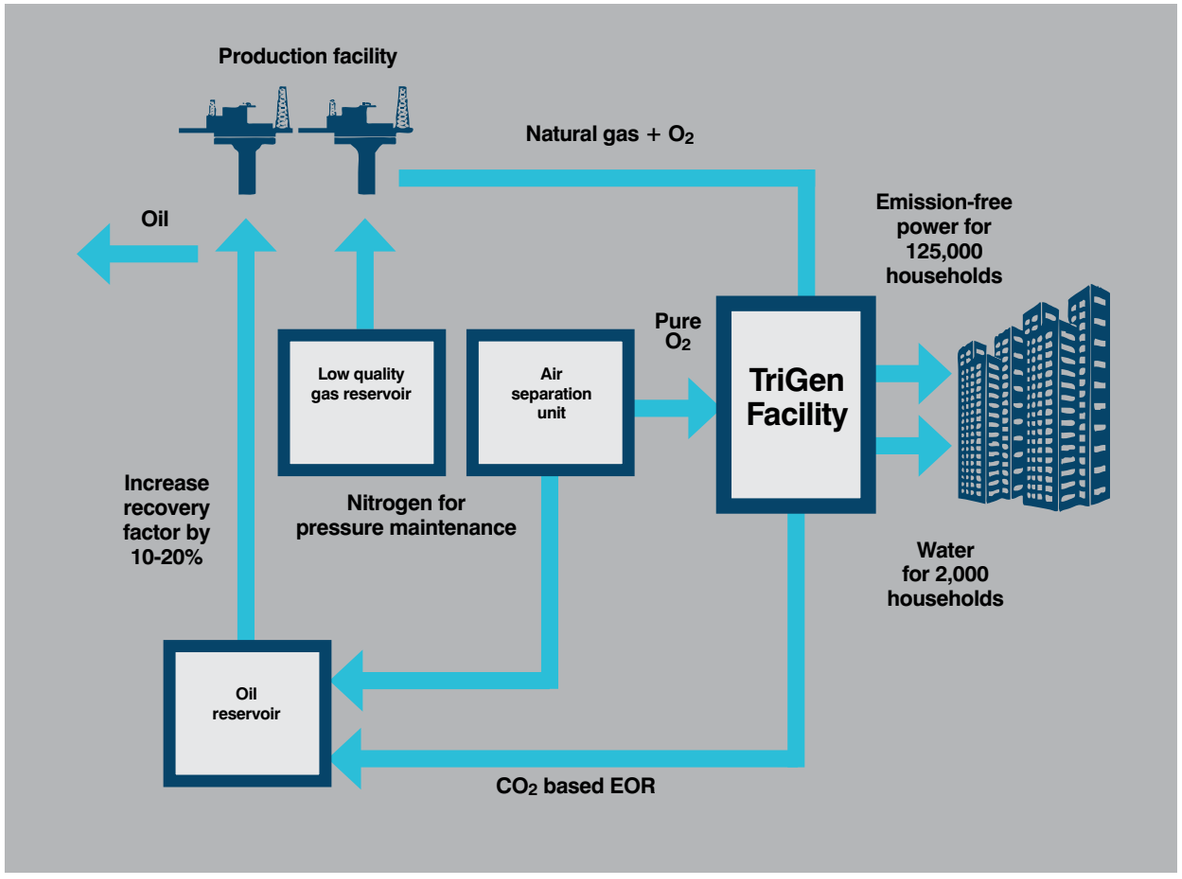
But through continued dialogue among Member Countries and greater collaboration on R&D activities, we can attend to this common challenge together - and continue to reach new frontiers in our industry.

H.E. Abdalla Salem El-Badri, Secretary General of the Organization of Petroleum Exporting Countries and the former Minister of Energy in Libya.



Maersk Oil Unlocks Potential With TriGen Technology

By Bob Alford



TRIGEN IS A POWER generator the size of a Maersk shipping container which burns gas with pure oxygen to produce power, water and 'reservoir ready' carbon dioxide. The resulting high purity CO2 is captured, making the power generation emission-free, which can then be used for Enhanced Oil or Gas Recovery (EOR/EGR).

In the Middle East, many countries have increasingly focused on clean energy, while many of their reservoirs are suited for CO2-EOR. In a TriGen application here, gas would be burned to produce clean power and pure water for households. Nitrogen, a by-product from the production of pure oxygen, and CO2 would be supplied to oil fields – nitrogen to maintain the pressure in depleting reservoirs and CO2 as the EOR agent coaxing out oil that would otherwise not be recovered.

Traditionally, CO2-based EOR has only been feasible in areas with large sources of natural CO2 – chiefly in the United States. But the ability to produce pure CO2 as a by-product of a power generation venture can now make CO2-based EOR attractive in regions such as the Middle East, which has limited sources of natural CO2.

"The technology provides Maersk Oil a competitive advantage in the Gulf region as it offers both the benefit of clean power and low-cost CO2 to increase recovery potential. The technology also complements Maersk Oil's current work and studies on CO2-based EOR in Denmark and Qatar, enabling us to offer integrated field development solutions in this area," said Bob Alford, TriGen Project Manager.

TriGen also provides resource owners a full life cycle development concept for EOR as its oxyfuel combustion process can accept the CO2 in the associated gas coming back from a CO2 EOR flood without requiring any costly pre-treatment for CO2 removal.

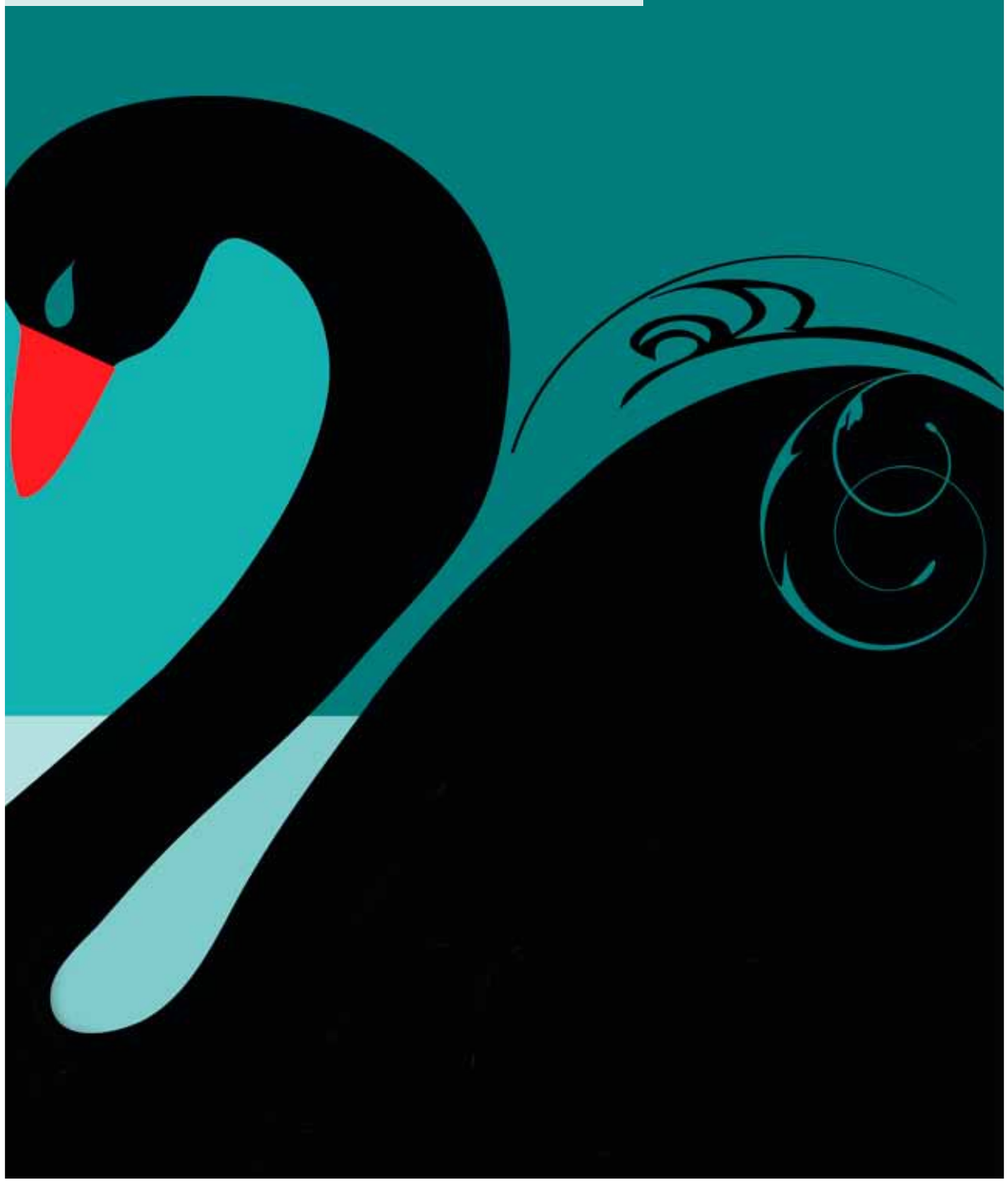
Maersk Oil's TriGen technology now brings solutions to the key challenges in implementing CO2 EOR by first providing low cost CO2 to initiate the project and then enabling the project to realize its full recovery potential by continuing to economically operate even with feedgas of up to 90% CO2.

For more information: www.maerskoiltrigen.com

Bob Alford
Senior Business Development Manager, Maersk Oil

Another Year of $100+ Oil? Be Careful What You Ask For!

By Sean Evers



OPEC'S12 member oil exporting countries earned about $1 trillion dollars in 2011. They are set to earn much more in 2012.

As we sit on the dawn of what looks like a global economic recovery spring dance after averting the winter Armageddon of a Euro collapse, the simultaneous 25% leap in WTI crude oil and US stocks remind me of the famous irrational exuberance quote by the now somewhat diminished former Fed Chairman Alan Greenspan which he spouted at a former roaring bubble in waiting – "Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions?"

Greenspan made these comments in a speech to the American Enterprise Institute as far back as 1996 when he still wore the halo of financial wizard, and yet he did nothing to heed his own warning which ended with the 1997 collapse of Asian economies, the first internet bubble burst and landed us with an oil price of under $10 a barrel.

> "The fourth quarter of 2011 and the first quarter of 2012 are separated by a Grand Canyon of logic, with wallops of comfort food served up by another central banker Mario Draghi with the European Central Bank printing one Tttttrillion free Euros."

It strikes me his successor Ben Bernanke has done his own exuberant two-step of printing cash like confetti with a guarantee to keep money free until 2014 – you could put the same Greenspan comment on the front page of *The Financial Times* today and it would be as relevant and timely.

The fourth quarter of 2011 and the first quarter of 2012 are separated by a Grand Canyon of logic with wallops of comfort food

served up by another central banker Mario Draghi with the European Central Bank printing of one Tttttrillion Euros.

Once upon a time when I was a lad the Mmmm in Million dollars would drop off your tongue with the thud weight of gold envy, and then with the arrival of the 90s crew of Gates, Buffet, Branson and friends the BBBbbbb of billion started to roll off our lips like a familiar family member smile, retiring Mmmm to an average 2 bedroom apartment.

Now the letter tuned into the forefront of our I mindpads is Tttttt, but unlike its predecessors a trillion dollars kind of gets spit out of the mouth with the negative burden of Xeroxed debt mountains – Like their European butter mountain predecessors found out that printing more butter than you would ever, ever, eat made all butter worthless, money may very likely follow the same path.

The reality is that we appear deluded by the same mirage that sent us off a cliff in 2008 i.e. that credit pretend printed cash unearned wealth is real! The sugar rush illusion triggered by a 25% jump in asset values is meaningless when quietly offshore in the background an inflation tsunami is destroying the value of money...how else do you pay off 15 tttrillion dollars?

Cash isn't worth the paper it's printed on at least that's what the Swedish believe as they move to ban it in most public places, a bit like cigarettes. A little-noticed tidbit in the ongoing European crisis is Italy plans to ban the use of cash for transactions over 1,000 euros.

Yet the world appears frozen in a deer in the headlight moment behaving with the view that if a tree falls in the forest it doesn't make a noise.

It strikes me that the Egyptian-American PIMCO CEO Mohammed ElArian has coined a somewhat appropriate phrase for this counterintuitive period we live in – the era of the new normal where former contradictory forces can co-exist: record corporate profits soaring stocks with record unemployment and $100+ oil, frenzied capitalist economics with communist governance managing a slowdown.

So with that logic, is it safe to go back in the new normal water, safe to open the metaphoric economic investment belt by just a hole or 2 and jump on board the risk on express...?

For all of us in the Gulf neighborhood, most things depend on whether you buy into the view that we've moved into a new epoch of triple digit crude oil prices, allowing countries and companies to plan with some certainty – most Gulf states are inching their annual budgets closer and closer to $100 oil.

There are certainly strong narratives to

support both paths up and down the mountain – demand erosion with recession in the EU and slowdown in China vs more U.S. jobs, limited increase in global oil production capacity and security of supply with drumbeats of unrest across the Middle East.

As the Lebanese-American economic philosopher Nassim Taleb might say, we have certainly had our fair share of Black Swans -- random unpredictable events that can have a huge impact on our lives -- in 2011 we saw the Japanese earthquake and the rolling Arab Spring help to keep Brent crude propped above $100.

One side of the brain shouts "long may it last!" and at the same token the sober side whispers "be careful what you ask for you just might get it."

And yet, I find it difficult to completely swallow the new normal as we are still caught in a supply-demand imbalance limbo land of far too many questions and very few answers. If most of the graphs are pointing to the sky, why are real interest rates still negative?

And then there is the China Wobble as the enormous ship slows down from 10% to 7.5% growth, but has the Titanic already collided with its iceberg?

It is a brave man, and every day that passes appears to suck more warriors off the sidelines into the herd momentum of which I am gritting my teeth to resist, that bets against Newton's *what goes up must come down* thesis as we saw the last time stock markets and oil prices were at these levels i.e. about this time of year in 2008.

Sean Evers is the Founder and Managing Partner of thegulfIntelligence.com

Middle East Gas Producers Should Look to Underground Gas Storage to Bolster Security of Supply and Optimize Gas Supplies

By Dr Axel M. Wietfeld

EUROPE HAS A shortage of natural gas and yet it has significant appetite for natural gas underground storage facilities. The Middle East has significant gas reserves but little apparent hunger for storage capacity. Demand growth in the former is waning and soaring in the latter – this discrepancy presents unique investment opportunities for those who seek to balance these inconsistencies in Europe and in the Middle East.

By all forecasts, global gas demand will grow nearly twice as fast as total energy demand over the next two decades, and this escalation is even more pronounced in the Middle East where natural gas demand will nearly double between 2010 and 2030 from 315 billion cubic meters to some 550 billion cubic meters.

Storage is the key to balancing this continuous uncertainty with import-export and seasonal fluctuations to demand. Consequently, investment in new build natural gas storage facilities and capacity extensions are the basis for sustainable, secure and competitive gas supplies.

Companies and countries can make use of storage facilities basically for three reasons - seasonal balancing, optimization, and security of supply.

Seasonal balancing is the obvious rationale for storing gas. Imports via pipeline or LNG are in general characterized by the same volume being delivered every month throughout the year, to minimize production and transportation costs. Therefore, additional storage capacities are required to provide seasonal balancing, i.e. to balance the difference between summer and winter consumption. Consequently, gas is withdrawn from storage in high-consumption periods and injected into storage during periods of low demand.

Producers and marketers also use gas storage as a speculative tool for optimization, i.e. storing gas when they believe that prices will increase in the future and then selling it when it does reach those levels.

Overall, gas storage significantly contributes to security of supply. The indigenous gas production of the European Union is expected to fall further, resulting into a situation by 2020 in which more than 70 % of the gas demand will have to be imported from countries outside of the EU. Consequently, supply security has to be actively managed. In January 2009 Europe faced the biggest ever gas emergency when all Russian supplies via Ukraine were disrupted. The crisis completely changed the attitude of policy makers, customers and suppliers.

Since the Middle East is blessed with 40% of the world's proven natural gas reserves, excellent untapped investment opportunities exist for companies in the region from trading to gas storage activities.

Middle East gas exporters can also look to build storage capacity in far-away customer markets in the same way that oil exporters have achieved such as Kuwait tank farms in Korea. Saudi Arabia and China agreed as far back as 2006 to build a huge crude oil storage facility on southern China's Hainan Island.

It is not a coincidence that in Europe, which is short of natural gas reserves, plenty of storage facilities have been developed to adapt the physical gas flows to the fluctuating and growing customer demand. This opens up opportunities for exporters and importers to cooperate on gas storage investment.

Depleted gas fields – in the Middle East as well as in Europe – would be excellent storage facilities for this kind of process. After having assessed the technical feasibility, investors have to evaluate economically whether it is favorable to develop storage facilities close to the gas production facilities or close to the consumption centers in the downstream markets.

At present, there exists an underground storage capacity of some 85 billion cubic meters in Europe and in addition some 30 billion cubic meters in Ukraine, which would be sufficient to store the entire Qatari annual LNG production in a gaseous form.

The likes of Eni, E.ON and GdF Suez have subsidiaries who own the largest underground storage facilities among all European players. In contrast, there are only a few storage projects in the Middle East e.g. the Margham Field in Dubai and the Jebel Ali Salt Dome in the UAE.

Some Middle East firms have identified the value proposition presented and have invested in European storage facilities – Abu Dhabi National Energy Company, known as TAQA, has acquired a stake in and is the operator of the Bergermeer storage project in The Netherlands – a facility with 4 billion cubic meters capacity.

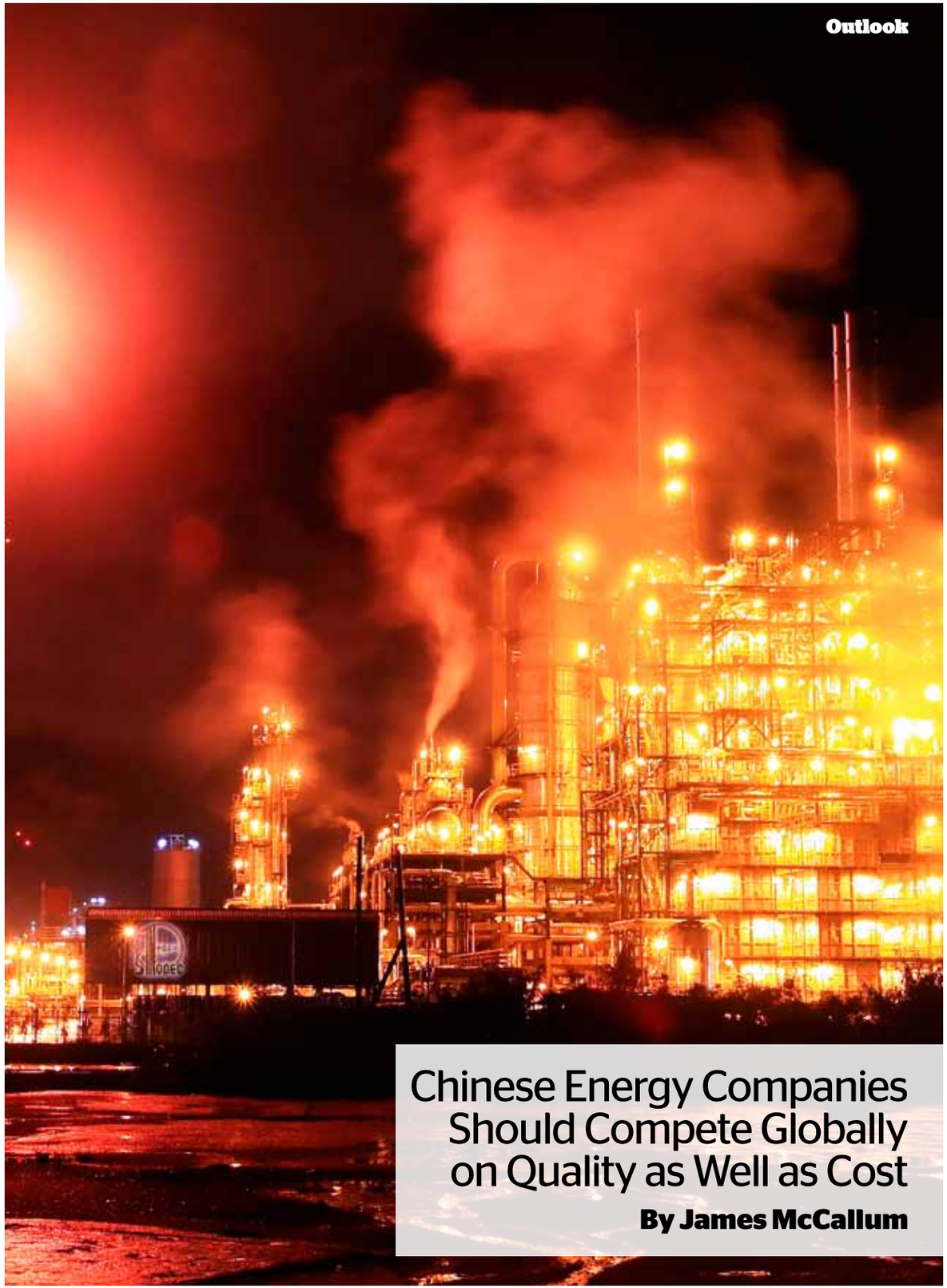
Statoil ASA, Vattenfall Energy Trading Netherlands N.V. and a third European energy company have together secured more than 90% of the total 1 billion cubic meters of annual storage capacity made available as part of the 2011 Bergermeer Gas Storage Open Season.

THESE INVESTMENTS generate a stable return and offer Middle East exporters the opportunity to integrate further down the value chain and get closer to their European customers. This could add even more value for both parties involved because underground storage in the European markets also helps in managing temporary supply disruptions and LNG transit times.

Underground gas storage is a value creating investment. With underground capacities of 10 billion m³, a company can achieve sales revenues above $1 billion.

Dr. Axel M. Wietfeld is CEO and Chairman of the board of E.ON Földgáz Storage, a unit of the E.ON AG, one of the world's largest investor-owned power and gas companies. At facilities across Europe, Russia, and North America, E.ON has more than 85,000 employees and generated almost EUR100 billion in sales in 2010.

Dr Axel M Wietfeld, CEO and Chairman of the board of E.ON Földgáz Storage, a unit of E.ON AG



Chinese Energy Companies Should Compete Globally on Quality as Well as Cost

By James McCallum

CHINA'S PREMIER Wen Jiabao recently completed a Gulf tour bolstering the posture of Chinese energy companies entering the region. The first stop for his 200-person entourage was Saudi Arabia where Aramco and a group of Chinese companies finalized an agreement to develop a 400,000 barrel per day refinery in Yanbu, on the kingdom's Red Sea coast.

Premier Jiabao also touched down in the UAE where Petrochina now has some 20 separate companies incorporated, employing 1,000 people – five years ago it had none.

In the UAE, the Abu Dhabi National Oil Company announced last year that it would provide 200,000 barrels of oil per day to the state-owned China National Petroleum Corporation from 2014, representing a huge leap in shipments to the world's second largest economy.

These developments aptly demonstrate China's need for energy, and its ability to look far and wide to secure a diverse range of suppliers. Currently the world's second largest energy consumer, China's oil demand jumped about 6 per cent in 2011.

As Chinese energy companies go global they need to incorporate quality, technology and service into their sales pitch rather than depend on cost advantage alone.

The country's state-controlled firms, which include CNPC, China National Offshore Oil Corporation (CNOOC) and China Petrochemicals Corporation (Sinopec), have spent most of the last decade securing assets in Africa and Central Asia, which produces similar oil to China's own domestic crude.

But in recent years, and especially with the opening up of Iraq, they have been driving into the Gulf, which holds some 70 per cent of the world's known hydrocarbon energy reserves, and are competing with their Western counterparts which have traditionally dominated this space. This is a reality that we now have to accept and adapt to.

As an example, Baoji Oilfield Machinery, a subsidiary of CNPC, won its first contract in Abu Dhabi in 2009 to supply oil rigs for onshore drilling.

China is a consumer of energy more than it is a producer of energy. The companies that have emerged to service China will need to develop and utilize their own proprietary technology, enforce international intellectual property laws and upgrade their quality so that they can compete on a level playing field with some of the world's better known product suppliers.

China is well placed to make this transition as it remains a part of the world where education is a fundamental gateway to the prosperity of the future, and so young people are encouraged to go to university overseas. That is a resource that the international energy industry, which is desperate for new talent to counter the potentially catastrophic combination of an ageing workforce and the drastically reduced numbers of energy related graduates emerging from northern and western universities, has not yet tapped into.

Traditionally international oil companies and energy services firms didn't look to China for reservoir engineers, geo-scientists or environmental engineers because the Chinese education system didn't encourage students into such areas as the indigenous industry was not that mature — but that has all changed in recent years.

International energy companies need to adapt and develop their own revised version of internationalizing that befits the energy era we are now moving into — in time it should be near to impossible to say that X energy company is from Y country. Everything about a global player should be global, with its brand supported by adopting best global practices and the best global talent wherever it originates.

That goes for the Chinese as well as the Western firms.

In the 20th Century growth story the world looked to the West (Europe) and the North (US). As a result most global firms had a strong associated position in these regions because this is where the economic opportunity stood. But what we are now clearly witnessing is the emergence of a new trade route from the South to the East with a conveyor belt moving in both directions, which goes all the way from Brazil through Africa into the Middle East and on to the emerging regions of Asia.

THE FIRST wave of Chinese energy companies arriving in the Middle East have competed the old fashioned way by under-pricing all other competitors. Playing the traditional Chinese cost card has secured much business for amongst others Chinese drilling companies in Iraq, such as Antonoil International, but that can't last.

It is clearly a short-term advantage. Low-cost labor has been an advantage which the Chinese economy has had for a very long period of time. But in terms of macro-economic statistics, China is changing rapidly and plans significant reforms over the next five years as the country tries to move away from an export-dependent economy to one also built on a pillar of domestic consumption.

The cost base will rise dramatically as one of the central tenets of the government's latest five-year plan adopted in March this year is to double workers' salaries by 2016 and provide pensions to almost half a billion people. That will obviously make competing on labor costs with international competitors a much more even playing field.

> "The posture has to move from not looking to beat or be beaten by the Chinese, to one of joining them."

We all know from anecdotal evidence and experience that if the Chinese move into a market place then they can potentially dominate it. That said, I think dominating solely on a cost mantra is not sustainable, but as Chinese companies internationalize, opportunities for partnership will emerge.

Chinese businesses operating in the Middle East, especially those in the energy industry, are increasingly focused on delivering quality and they are beginning to focus significantly on service, which is the most challenging of all, by complementing their own drive and ambition with the experience of targeted expatriate talent from their existing Western competitors.

International energy players are well placed to integrate with Chinese companies who are eager to work with them to achieve this transition quickly and effectively.

It is a win-win for all parties to supply what will soon become the world's biggest energy market of some 1.5 billion people.

The posture has to move from not looking to beat or be beaten by the Chinese, to one of joining them.

James McCallum, Chief Executive Officer and Co-Founder of Senergy

"Don' t Believe Forecasters... Be Brave!"

FEATURE INTERVIEW:
H.E. Abdullah Bin Hamad Al-Attiyah, President of the Administrative Control and Transparency Authority, Qatar, engages in a feature interview with Sean Evers, Managing Partner, Gulf Intelligence.

SEAN EVERS: *Your Excellency, the CEO of one of the world's biggest energy companies dismissed the issue of peak oil supply but said he expects the world to face peak oil production of 95 Million barrels a day by about 2020 -- What do you think of that forecast?*

H.E. ABDULLAH BIN HAMAD AL-ATTIYAH: Well, I think it can't be possible, can't be, because we know technology can give you a solution for a lot of difficult questions.

For example when we planned to build an LNG terminal in Golden Pass, Texas all forecasts at the time said gas prices in U.S. would reach over $17. So, it was a very attractive market and everyone was running to U.S. With our partners from ExxonMobil we built a very nice terminal in Golden Pass, which was one of the largest terminals in U.S.

At the time all consultants believed that U.S. domestic supply of natural gas was declining and they would need to import more natural gas. Everyone was saying shale gas is too expensive to develop; it needs a high price to keep it economic.

But technology was moving very fast in U.S., much faster than our expectations.

You told me that the CEO of one of the biggest energy companies is forecasting peak oil production, well when we went into Texas we were with ExxonMobil, who is bigger than ExxonMobil…?

Everyone was convinced that America would be the next big market for gas – in just in 2 or 3 years the price of natural gas collapsed below $4, suddenly everyone woke up in a nightmare asking what happened?

You know what happened then? The consultants started talking to me to export LNG from U.S. They want me now to convert Golden Pass from an import terminal to an export LNG terminal.

If somebody forecast 5 or 6 years ago that America would need to export energy, no one would believe it!

I will advise you something free of charge, I will give you free advice – You know, don't believe forecasting.

Take my advice I served for almost 40 years in the energy sector, be careful. When someone come to me and start talking 10 or 20 year forecast, I say please leave it, let's talk about next year!

SEAN EVERS: *If you were a consultant to your former OPEC colleagues, meeting in Vienna, would you advise them to invest $100 billion per year to add new capacity?*

H.E. ABDULLAH BIN HAMAD AL-ATTIYAH: Yes, yes because this is oil and oil is not a renewable resource. This is a depleting resource. You will need to act now, not after 10 years. It doesn't mean you will add production capacity over what exists now; you will have to add capacity just to balance even what exists today.

So, yes you need to invest, you need to cope with the demand. Everyone talks about India and China, they came at the right time as their demand growth helped the industry to be more dynamic and pick up demand erosion elsewhere. You see Europe is in decline, U.S. is in decline. At the peak, in the U.S. back in the 1980s, they consumed 23 to 24 million barrels a day, today maybe it is 18, that means 5 million barrels a day was demolished from U.S. consumption, but it was taken up by China and India.

SEAN EVERS: *Would you recognize that we are entering a new phase in the industry, that the age of easy energy production is over and that we now face a more challenging period where the role of technology will be much more important, like in the development of Al Shaheen oil field in Qatar?*

H.E. ABDULLAH BIN HAMAD AL-ATTIYAH: Al Shaheen is a different question. Al Shaheen was discovered back in the early 1970s by Shell. Shell also discovered the North Field in 1971-72 and it was a big disappointment even to Shell and even to us as it was gas, it was not oil. So Shell left it, saying I don't need it, it's gas - what should I do with it.

Even Al Shaheen, when it was discovered, Shell said it was a very difficult reservoir – it's not economical to produce it. It has huge reserves but it is very difficult to produce it.

> "Maersk I think, we should admit it, they worked very hard and they improved a lot of technology on how to maximize production, even with the very difficult layers. So today, it is one of the biggest fields in Qatar."

It took us 20 years to develop and then when other companies came to compete in Al Shaheen, I remember Amoco, Maersk and others all came.

Maersk gave the best conditions, the best prospective. And at the time even Maersk, they predicted the maximum production they could reach was 50,000-60,000 barrels a day. But thanks to technology, because technology has advanced – Maersk I think, we should admit it, they worked very hard and they improved a lot of technology on how to maximize production, even with the very difficult layers. So today, it is one of the biggest fields in Qatar.

When you talk about heavy oil and analysts say only 15% of 3 trillion barrels is recoverable with current technology, I am sure tomorrow it will be 20% and after that it will be 25% -- you have to trust technology.

It is most important to concentrate on technology. I remember when we built the first freight at Qatar Gas the capacity was 2 million and within a few years we built a train with a capacity of 7.8. So, technology helps and plays a very positive role.

SEAN EVERS: *What ingredients do you think have to be present in an IOC-NOC relationship in order for sufficient confidence to be present to make large scale investments and for technology to be transferred?*

H.E. ABDULLAH BIN HAMAD AL-ATTIYAH: Good, good question. I would like to take you back to 1975, this is the year that the NOC was born. Before that the IOC controlled everything and they didn't even talk with the producer country, they wouldn't let the producer countries to develop the energy together with them.

So after 1975 we saw the birth of the NOC, we saw QP, ADNOC, Aramco -- many, many NOCs came to challenge the IOC, and that is when what I call "the war" started between the NOC and IOC.

The NOC was still not mature, it was still angry, not experienced. They had no technology, no research. The IOC had everything. They had the human resources, they had the capital, everything. I remember, many times the IOC would threaten the NOC, they would never give you any technical support, they would push you to show how you were weak and how you should come to them.

This war lasted more than 20 years. For 20 years it was very, very difficult, the NOC and IOC couldn't even talk to each other. I remember, if you met with anyone from an IOC you had to be careful, they were regarded as the main enemy and they were coming to destroy you.

But I think the best conclusion came after a long 20 years, everyone knew that even the NOC and the

IOC can't eliminate the other, no one can beat the other.

And as the expression says, if you can't beat them, join them.

The new generation in the IOC became more open. The new IOC CEOs understood that the best way was not to go for a long war because in the end, everyone would lose. I am very happy to say in my era as Energy Minister, in the last 20 years, we worked very well with the IOCs. We established a real partnership, not like in the old time when the IOC would just give orders. Now we work together inside and even outside of Qatar. This is very, very positive. This is how to create a long term relationship.

Today we are equal, this is the most important, equal partners.

"Today we are equal, this is the most important, equal partners."

SEAN EVERS: *How big a crisis do you think is emerging with a shortage of energy talent for both NOCs and IOCs?*

H.E. ABDULLAH BIN HAMAD AL-ATTIYAH: I think when we talk about the challenge of technology, research and human resource shortage, we have to go back to 1985 and the first crisis in the industry when the oil price fell suddenly. International energy companies and even national companies faced a lot of difficulties, they almost went bankrupt.

So what they did was they cut jobs. They fired thousands of good engineers, but what was the result?

The result was that from 1985 to 2000, the industry failed to build its talent base, and when the industry woke up in 2001, there was a big shortage of talent. From 1985, many young top notch students stopped entering the engineering departments because they knew there was no future.

IT and banking was the future and they attracted all the talent -- everyone was saying if you want to make money go to San Francisco, go to Silicon Valley, so until today all oil companies are facing a big shortage of talent.

Never mind engineers, I remember a few years ago we couldn't find good welders to come to work on the pipelines. There was a big shortage and some major projects in the energy sector have been delayed, sometimes 2 or 3 years, because there is a shortage of manpower and to rebuild it will take years.

Last year, I was so surprised to see in one of the local English newspaper in Doha a lot of advertising from oil and gas companies in India who wanted to attract Indians working in Qatar to go back home. They were offering very good packages, even higher than our package, and this is to show today that there is no cheap market and especially not for talented people.

Even today a young Qatar engineer will not go directly to Qatar Petroleum, they will first come and ask what is my offer because I have other offers from company X and Y -- so there is even competition inside the country itself with the nationals.

SEAN EVERS: *Is the energy industry in general too conservative, too careful and in essence too afraid to take risks on developing new technology?*

H.E. ABDULLAH BIN HAMAD AL-ATTIYAH: I agree with you 100%!

IOCs and NOCs should spend much more on their technology and R&D because this is the most important challenge we face if you want to increase the recovery rates on heavy oil from 15% to 20% or from 20% to 25%. I'm confident we will reach it but you need more research, more R&D.

If you increase just 1% of your recovery for instance, you know it will cover all your expenses and you will make a lot of money. At first, national oil companies were not interested in spending money on R&D because sometimes the government purse took all the oil revenue. But now they understand that they should challenge the IOC and sometimes should work together in the R&D.

The energy industry is very sensitive and should not overreact like in 1985 when we overreacted and now we are paying the cost. We have to keep our forces. We should not just take a reaction and cut jobs and fire people, we have to be strong and be patient in difficult times as things always recovery and we need our resources available when they do.

Everyone needs us! They are relying on us.