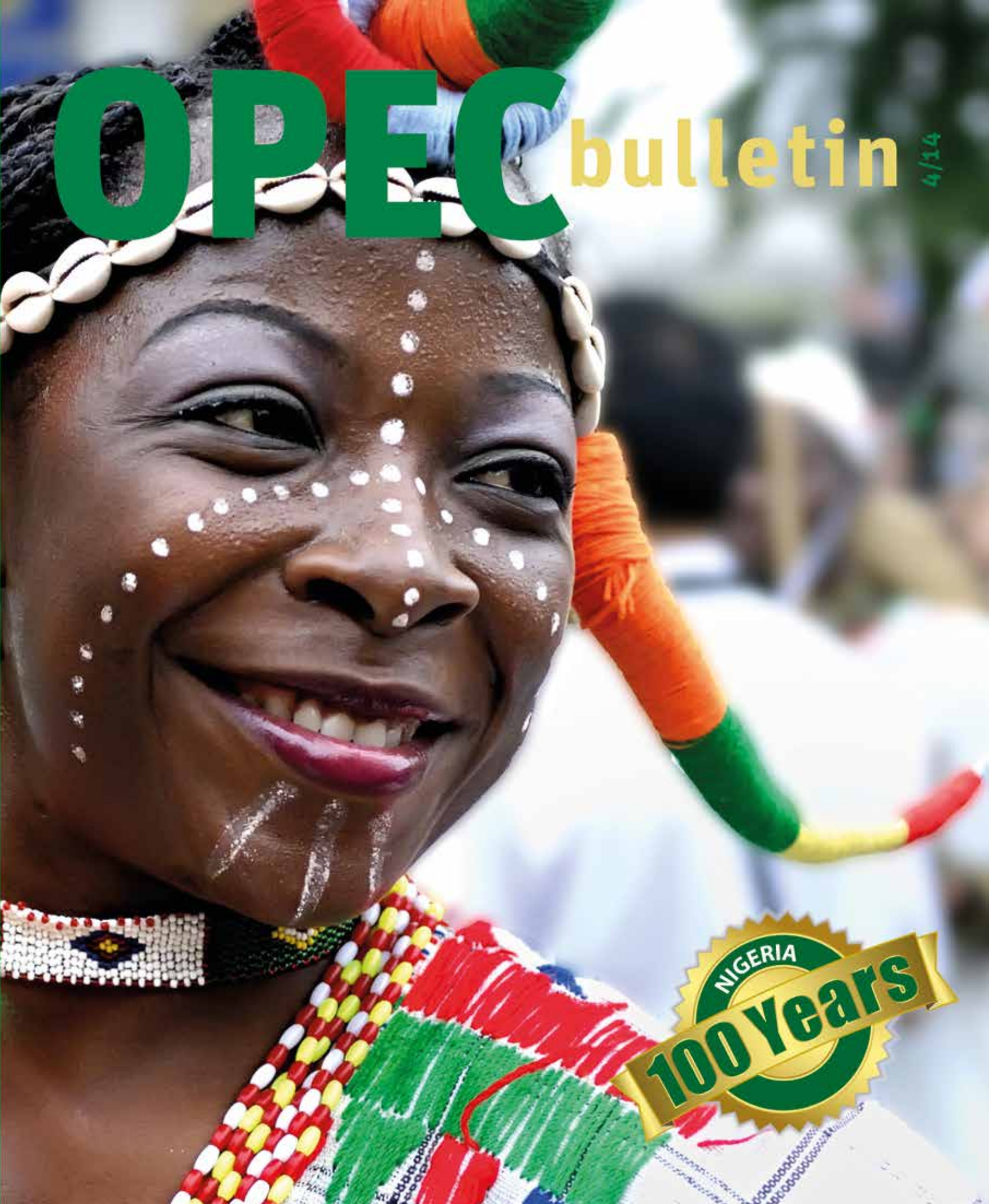
OPEC bulletin

4/14



Other OPEC flagship publications

Among OPEC's various objectives, one of them is to continually strive to provide oil market data and analysis to energy stakeholders and to the general public. It does this by publishing different monthly and annual publications, which consider many aspects of the global oil industry – with an emphasis on OPEC Member Countries. Two of the Organization's flagship publications are the **World Oil Outlook** and the **Annual Statistical Bulletin**. The 2013 editions can be downloaded free-of-charge from our website at: www.opec.org.

OPEC: A force for global stability

When OPEC Secretary General, Abdalla Salem El-Badri, addressed the customary press briefing at the end of the OPEC Conference in December last year, he expressed optimism that 2014 would be a good year for the international oil market. It was not a statement made lightly, but one borne out of the data, forecasts and projections drawn up by his research staff at the OPEC Secretariat in Vienna in support of the impending decisions to be made by the Organization's Oil and Energy Ministers.

Well, we are already midway through the second quarter and that optimism appears to have been well-founded. So far, so good, as the saying goes. OPEC's *Monthly Oil Market Report (MOMR)* for April attests to this. Its figures show that the fundamentals are balanced: oil demand remains firm in tandem with the gradual improvement in the global economy; supplies to the consumers are more than ample; stocks of crude and products are at healthy levels; and prices are reasonable and, most importantly, relatively stable. Admittedly, the month of April did witness a slight dip in both oil demand and economic expansion figures, due to such factors as downward revisions to the economic growth of some emerging economies — as well as Russia — coupled with the unfolding events in Ukraine, but this is hopefully a temporary blip with the overall growth trend for 2014 tending upwards. Of note, is the expected improvement in the OECD region this year, which is welcome news after the prolonged period of negative growth suffered by the bloc as a result of the global financial crisis.

Of course, one cannot say we are out of the woods yet. As the past few years have taught us, good fortune can very quickly turn to misfortune, so there is certainly no room for complacency. But today, with all the attention and scrutiny the global economy has received — and continues to receive — coupled with the various controls and fail-safe mechanisms now in place, slowly and surely confidence has been building and the overall economic picture is becoming less hazy. This is without doubt good news for all those associated with the international energy scene, and particularly for the socio-development aspirations of OPEC Member Countries.

Entering the spring and summer months in the northern hemisphere usually brings with it a fair amount of apprehension within energy industry circles. That is primarily as a result of the fact that the second quarter, particularly, and the third quarter, to a lesser extent, is synonymous with a downturn in crude oil demand. But in keeping with the changing face of global energy demand patterns, that is no longer necessarily the case. As the April OPEC *MOMR* reveals, total world oil demand in the second quarter of 2014 is actually projected to be higher than in the winter months of the first quarter. That is due to one main reason. In general, oil demand in the OECD has remained flat for quite some time now with marginal or no growth. This region used to be the demand powerhouse as the industrializing economies grew after World War II. That mantle is being increasingly handed over to the developing countries — specifically the emerging economies of Asia. It is in the East where the planet's main energy demand thrust lies now — and in the future — and it is where the fortunes of the oil producers, including OPEC, lie going forward. As OPEC's *World Oil Outlook (WOO)* for 2013 points out, with world energy demand set to grow by 52 per cent up to 2035, crude oil demand is expected to rise by 20 million barrels/day, with a mammoth 88 per cent of this being accounted for by developing Asia. This expansion will necessitate huge investment in the extra production capacity required. In OPEC's case, the *WOO* forecasts the Organization's Member Countries spending in the region of $35–40 billion annually in the coming decade and over $50bn a year in the long-term. In the non-OPEC countries, investments will be considerably higher at around $170bn annually in the medium term.

Those are staggering sums, showing an unprecedented commitment by producers to ensure consumers receive adequate future oil supplies. So, it goes without saying that, today, more than at any other time, oil market conditions conducive to this investment need to be firmly in place. And that requires the principal stakeholders — the producers, the consumers, the oil companies, and the investors — co-operating and working together like never before to ensure the smooth running of the oil market. OPEC, for its part, stands ready to speak with any interested party if it helps the long-term welfare of the market and the business interests it represents. That is why the Organization, since its inception over half a century ago, has been relentless in its quest to attain market equilibrium and fair and reasonable crude oil prices. Dialogue and cooperation are crucial if international oil markets are to remain stable and functioning correctly, with a minimum level of speculation.

As Secretary General El-Badri pointed out in Doha in early April, while attending the annual Abdullah Bin Hamad Al-Attiyah Energy Awards *(see page 6)*: "Stability is central to everything we do. It is the overarching concern that links us all."

OPEC is indeed a force for global stability. It hopes others will follow its example — for the ultimate good of all.

Contents

OPEC bulletin

Cover
This month's cover reflects Nigeria's centenary, which saw many celebrations throughout the country (see story on p38). Photo courtesy Shutterstock.

Vol XLV, No 3, April 2014, ISSN 0474—6279

Publishers
OPEC
Organization of the Petroleum Exporting Countries
Helferstorferstraße 17
1010 Vienna
Austria
Telephone: +43 1 211 12/0
Telefax: +43 1 216 4320
Contact: The Editor-in-Chief, OPEC Bulletin
Fax: +43 1 211 12/5081
E-mail: prid@opec.org
Website: www.opec.org

Website: www.opec.org
Visit the OPEC website for the latest news and information about the Organization and back issues of the *OPEC Bulletin* which are also available free of charge in PDF format.

OPEC Membership and aims
OPEC is a permanent, intergovernmental Organization, established in Baghdad, on September 10–14, 1960, by IR Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. Its objective — to coordinate and unify petroleum policies among its Member Countries, in order to secure a steady income to the producing countries; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the petroleum industry. Today, the Organization comprises 12 Members: Qatar joined in 1961; Libya (1962); United Arab Emirates (Abu Dhabi, 1967); Algeria (1969); Nigeria (1971); Angola (2007). Ecuador joined OPEC in 1973, suspended its Membership in 1992, and rejoined in 2007. Gabon joined in 1975 and left in 1995. Indonesia joined in 1962 and suspended its Membership on December 31, 2008.

Secretariat officials
Secretary General
Abdalla Salem El-Badri
Director, Research Division
Dr Omar S Abdul-Hamid
Head, Energy Studies Department
Oswaldo Tapia
Head, Petroleum Studies Department
Dr Hojatollah Ghanimi Fard
General Legal Counsel
Asma Muttawa
Head, Data Services Department
Dr Adedapo Odulaja
Head, PR & Information Department
Hassan Hafidh
Officer-in-Charge, Finance & Human Resources Department
Kamal Al-Dihan
Officer-in-Charge, Admin & IT Services Department
Badreddine Benzida

Contributions
The *OPEC Bulletin* welcomes original contributions on the technical, financial and environmental aspects of all stages of the energy industry, research reports and project descriptions with supporting illustrations and photographs.

Editorial policy
The *OPEC Bulletin* is published by the OPEC Secretariat (Public Relations and Information Department). The contents do not necessarily reflect the official views of OPEC nor its Member Countries. Names and boundaries on any maps should not be regarded as authoritative. The OPEC Secretariat shall not be held liable for any losses or damages as a result of reliance on and/or use of the information contained in the *OPEC Bulletin*. Editorial material may be freely reproduced (unless copyrighted), crediting the *OPEC Bulletin* as the source. A copy to the Editor would be appreciated.

Editorial staff
Editor-in-Chief
Hassan Hafidh
Editor
Jerry Haylins
Associate Editors
James Griffin, Alvino-Mario Fantini, Maureen MacNeill, Scott Laury
Production
Diana Lavnick
Design & layout
Carola Bayer and Tara Starnegg
Photographs (unless otherwise credited)
Diana Golpashin and Wolfgang Hammer
Distribution
Mahid Al-Saigh

Indexed and abstracted in PAIS International
Printed in Austria by Ueberreuter Print GmbH

El-Badri in live Q&A interview in London

OPEC Secretary General, Abdalla Salem El-Badri (l), with Liberum's Head of Content, Adam Smallman (r).

OPEC Secretary General, **Abdalla Salem El-Badri**, took part in a live interview session in London in March, at which he answered questions about the Organization and various aspects of the global energy industry. Organized by investment bank, Liberum, El-Badri fielded questions put to him by Adam Smallman, formerly of Dow Jones and Lloyd's List and now Liberum's Head of Content. The 70-strong audience was made up of professional investors representing pension and investment funds, oil and gas investment analysts and a number of oil, gas and service companies.

El-Badri's 40-minute interview covered such subjects as the current oil market situation, the advent of tight oil, capital expenditure and investments, the relationship between the national oil companies (NOCs) and international oil companies (IOCs), prices and taxation, as well as the environment. It was followed by 20 minutes of questions from the audience.

Liberum is heavily involved in the energy industry, providing research, sales, trading and corporate advice to European and North American institutional investors and companies across the oil, gas, renewable and power sectors.

Balanced market

Asked by Smallman about the current oil market situation, the OPEC Secretary General stressed that the market was well balanced. He talked about current OPEC oil production, which stood at around 30 million barrels/day, as agreed by its Members. He added that petroleum stocks were at healthy levels with "crude oil stocks in the OECD region alone at 56 days of forward cover … and this is apart from the strategic stocks held by OECD governments. So there really is no shortage of oil in the market," he said.

Concerning the subject of tight oil, particularly in North America, where it has transformed the oil production fortunes of the United States, El-Badri was asked just how deliverable this non-conventional oil source was.

El-Badri said that OPEC welcomed the tight oil newcomer to the oil sector, stressing that it was not deemed a threat to the Organization or its Members.

"Tight oil is another source of supply and it can help relax the oil market a little. But it is not a revolution. There is a lot of exaggeration about tight oil's potential. The danger about exaggerating this potential, especially in the US, is that other countries might then tend not to invest in future capacity expansion," he affirmed. And the possible consequences of this could mean a future shortage in supply, he added.

Referring to figures from the OPEC Secretariat and the

Organization's World Oil Outlook (WOO), El-Badri said that US tight oil output was expected to reach about 3.9m b/d by 2018. "If you add natural gas liquids (NGLs) to this figure, US tight oil production will amount to just under 5m b/d. But from 2018, output will decline."

El-Badri maintained that, despite all the talk and speculation, in his opinion the US would never become energy independent. "No-one will; it is not the world we live in."

The OPEC Secretary General then underscored that the Organization would need to increase supplies post-2108 — otherwise there would be the threat of a shortage and prices could soar.

"So OPEC is expected to produce at around 30m b/d of crude until 2018, but then it will have to increase output to around 37m b/d by 2035 from 2018 or 2020," he stated. In terms of all OPEC liquids, the Organization will need to produce 47m b/d by 2035.

He also stressed that the world had enough resources to meet future demand. He highlighted that when he took over the reins of OPEC Secretary General in 2007, a lot of people were talking about the advent of peak oil. "I said at the time that there was no shortage ... now very few talk about peak oil."

Moving on to the subject of capital expenditure and investments for the future, El-Badri offered a series of projections drawn up by OPEC covering spending in upstream, midstream and downstream up to 2035, as contained in the WOO.

Future investments

In stressing that "we have to invest in the future," he revealed that over the next two decades or so, oil-related investments would amount to about $8 trillion. Of that total figure, $5.2tr would be spent in the upstream, $1tr in midstream and $1.5tr in downstream.

"In the upstream, OPEC will spend up to $40 billion a year in the medium term and then around $50bn annually in the longer term," he stated.

He also underscored that OPEC Member Countries were also investing in the downstream. "OPEC Member Countries are now investing in (joint ventures) the downstream in China, South Korea and Japan ... these refining investments could bring online about 2m b/d of capacity. "This shift to the East is happening because 90 per cent of future oil demand is taking place there," he added.

With all this investment activity in future capacity additions taking place, El-Badri asserted that cooperation between the NOCs and the IOCs was growing in importance.

"For the oil industry to move forward there must be cooperation between the NOCs and the IOCs. There is no other way."

El-Badri explained that the petroleum sector particularly needed the enhanced oil recovery technology that the IOCs offered to boost oil recovery rates from the current 40 per cent up to 60 per cent or beyond.

A Q&A session was held with the audience after El-Badri's interview.

"The oil in place is there, but you need the technology to free it up. I am sure that because of this fact alone we will see an era of cooperation between the NOCs and the IOCs," he said.

Asked by Smallman about crude oil prices, and the fact that they had witnessed "amazing" stability over the last couple of years, the OPEC Secretary General stressed the importance of avoiding the two extremes of high and low prices.

"In our Long-Term Strategy, we are not looking for the two extremes in oil prices. This is because the extreme of higher prices at the end of the day will affect demand. And if demand is affected, then our business will be affected.

"Alternatively, extreme low prices can encourage high consumption, he said, and, potentially deter investment. So it is really not wise to have too high or too low a price," he said.

El-Badri maintained that people — both producers and consumers — were comfortable with crude oil prices at around $100 to $110/b.

He also said that many consuming governments were actually able to earn more from fuel products through taxation at the pump than producers actually got for the raw crude.

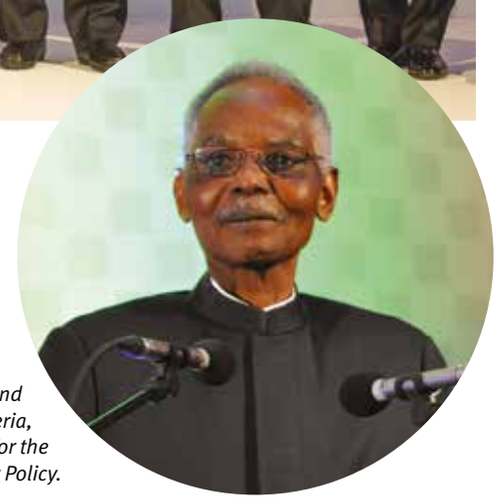
Another topical subjected broached by Smallman was the environment and what OPEC's stand was on it.

El-Badri replied that the Organization cared very much about the environment, but added that it was very important to heed the agreements of the United Nations Framework Convention on Climate Change (UNFCCC).

"We are all on the same planet and if something happens it affects us all. But we are bound by the UNFCCC terms and we hope that, at the end of the day, a win-win situation will prevail," he added.

Lukman, Shihab-Eldin among those honoured at 2014 Al-Attiyah Awards

Abdullah Bin Hamad Al-Attiyah (c), with (l–r), Andy Brown, Nobuo Tanaka, Dr Adnan Shihab-Eldin, Walid Khadduri, Dr Ibrahim Ibrahim, Professor Tan Chorh Chuan.



Dr Rilwanu Lukman, a former OPEC Secretary General and previous longtime Petroleum Resources Minister of Nigeria, received a Lifetime Achievement Honorary Award for the Advancement of International Energy Policy.

Former high-ranking OPEC Secretariat officials — Dr Rilwanu Lukman and Dr Adnan Shihab-Eldin — figured prominently in the second year of the Abdullah Bin Hamad Al-Attiyah International Energy Awards, which honour top energy officials for their lifetime achievements. OPEC Secretary General, ***Abdalla Salem El-Badri****, a member of the Awards Selection Committee, gave the annual lecture at a special awards gala dinner in the Qatari capital, Doha, in early April.*

Dr Adnan Shihab-Eldin received a Lifetime Achievement Award for the Advancement of OPEC.

Dr Rilwanu Lukman, a former longstanding OPEC Secretary General and previous longtime Petroleum Resources Minister of Nigeria, was conveyed with a Lifetime Achievement Honorary Award for the Advancement of International Energy Policy at a special gala dinner awards ceremony in Qatar, attended by local and international energy leaders.

Lukman, who has been involved in OPEC affairs for many years, with several terms as OPEC Conference President, is now Honorary Advisor on Energy and Strategic Matters to the President of Nigeria.

Dr Adnan Shihab-Eldin of Kuwait received a Lifetime Achievement Award for the Advancement of the Organization of the Petroleum Exporting Countries (OPEC).

He held the position of Acting for the OPEC Secretary General at the Organization's Secretariat in Vienna, Austria, after becoming Director of OPEC's Research Division.

Shihab-Eldin is now Director General of the Kuwait Foundation for the Advancement of Sciences and Advisor to and Member of the Kuwait National Nuclear Energy Committee (KNNEC).

Held at the Museum of Islamic Art in Doha, in the presence of Her Excellency Sheikha Al Mayassa Bint Hamad Bin Khalifa Al-Thani, Chairperson of the Board of Trustees of the Qatar Museums Authority, the second edition of the annual Awards, organized and presented by *Gulf Intelligence,* also recognized four other top energy officials for their distinct personal accomplishments in the industry over the course of their careers.

Dr Ibrahim Ibrahim, Economic Advisor to the Emir of Qatar, received a Lifetime Achievement Award for the Advancement of the Qatar Energy Industry, while Nobuo Tanaka picked up a Lifetime Achievement Award for the Advancement of Producer-Consumer Dialogue.

Tanaka, the former Executive Director of the Paris-based International Energy Agency (IEA), is now Global Associate for Energy Security and Sustainability at the

All images in this feature courtesy Gulf Intelligence.

Nobuo Tanaka's (r) Lifetime Achievement Award for the Advancement of Producer-Consumer Dialogue was presented by Abdullah Bin Hamad Al-Attiyah.

Al-Attiyah presented the Lifetime Achievement Award for the Advancement of International Energy Journalism to Walid Khadduri.

Institute of Energy Economics, as well as a Professor at the University of Tokyo, Japan.

In addition, Professor Tan Chorh Chuan, President of the National University of Singapore, received a Lifetime Achievement Award for the Advancement of Education for Future Energy Leaders, while Walid Khadduri, former Editor-in-Chief of the Middle East Economic Survey (MEES), picked up a Lifetime Achievement Award for the Advancement of International Energy Journalism.

"I am very glad that the Abdullah Bin Hamad Al-Attiyah International Energy Awards have become a fixture in the annual energy calendar because it is a truly unique opportunity to celebrate those with outstanding achievements in the energy sector," commented Abdullah bin Hamad Al-Attiyah, Qatar's former Energy Minister who now chairs the country's Administrative Control and Transparency Authority.

Al-Attiyah's comments were backed by Andy Brown, Shell Upstream International Director, who extended his congratulations to the "truly distinguished winners" of the Awards.

He said it was an event that Shell was honoured to support and be associated with, adding: "Celebrating such outstanding individuals is of particular importance at a time when today's young generation needs role models to look up to so that they choose rewarding careers in the energy industry."

During the gala evening, OPEC Secretary General, Abdalla Salem El-Badri, gave the awards lecture, in which he spoke about the outlook for global energy markets in the light of recent geopolitical developments *(see opposite)*.

El-Badri was also a member of the independent awards selection committee, which comprised seven volunteer experts, including Dr Aldo Flores-Quiroga, Secretary General, International Energy Forum (IEF); Dr Daniel Howard Yergin, IHS Vice Chairman, IHS (founder of Cambridge Energy Research Associates); Nasser Al Jaidah, CEO, Qatar Petroleum International; Dr Mark Weichold, Dean & CEO, Texas A&M University at Qatar; Simon Henderson, Baker Fellow and Director of the Gulf and Energy Policy Programme at the Washington Institute; and Randa Takieddine, Paris Correspondent, Al Hayat Newspaper.

The selection committee was deemed critical to the transparent and stringent four-stage process that set out clear criteria and allowed for impartial voting.

Contenders for the awards were evaluated based on a matrix consisting of four key criteria: impact; leadership and partnership; innovative and creative thinking; and long-term vision.

The Al-Attiyah Energy Awards, supported by Qatar Shell as the Gold Partner and Qatar Petroleum as the Silver Partner, were established in 2013 to celebrate the legacy of Qatar's former Minister of Energy and recognize distinguished individuals for their achievements over the full career cycle in the global energy industry.

Al-Attiyah is recognized globally for having made a formidable contribution to the international energy industry over many decades, a career that has touched so many people, companies and nations, producers and consumers, and perhaps most notably the development of his home State of Qatar's energy industry.

El-Badri attends Al-Attiyah International Energy Awards in Doha

Stability central to the future welfare of the oil market

The global petroleum industry needs stability in all its forms to help ensure a more balanced market today, which will help provide a balanced market in the future, according to OPEC Secretary General, Abdalla Salem El-Badri.

"Stability is central to everything we do. It is the overarching concern that links us all," he said at a gala dinner marking the 2014 Abdullah Bin Hamad Al-Attiyah International Energy Awards, held in the Qatari capital, Doha, in early April.

In a comprehensive address on the global energy outlook, including the effects of geopolitical events and the future role of Middle East and North African (MENA) oil suppliers in helping secure global energy demand, El-Badri stressed just how important stability was for the petroleum sector.

"We need stability — for investments and capacity expansion, to guarantee supply levels are adequate and sufficient, and to enable producers to respond quickly and appropriately in times of unexpected supply constraints.

"We need stability — for investors and producers to realize a fair return from the exploitation of their non-renewable resource.

"We need stability — for consumers to receive reliable and secure supplies.

"We need stability — for the market to react and respond to future unforeseen events," he listed.

The OPEC Secretary General pointed out that all these important areas required stability in view of the fact that it was already clear that world energy demand would grow in the years ahead.

Referring to figures contained in OPEC's 2013 World Oil Outlook (WOO), he said world energy demand was set to rise by 52 per cent over the period between 2010 and 2035.

In the equation, renewables — from wind, solar, small hydro and geothermal — were expected to expand by over seven per cent per year, often as a result of government support and incentives.

"They certainly hold promise; but globally, their share of the energy mix will still be less than three per cent by 2035, given their low initial base," he informed.

El-Badri said that both the share of biomass and nuclear remained at steady levels throughout the forecast period, at around nine per cent and six per cent, respectively.

"So it is fossil fuels that will continue to play the dominant role in meeting demand, although their overall share will fall from 82 to 80 per cent," he told the audience.

El-Badri said that throughout most of the forecast period, oil would remain the energy source with the largest share, although its overall share would decline from 33 to 27 per cent.

Coal's share remained relatively stable at around 27 per cent. The share of natural gas, however, was expected to rise from 22 to 26 per cent.

Demand set to increase

Focusing specifically on oil, he said OPEC's projections saw demand increasing by around 20 million barrels/day during the period to 2035.

"And there will be a big shift in the balance between the OECD area and elsewhere, leading to a steady decline in demand in all OECD regions. It will be developing countries that drive demand, with developing Asia accounting for most of the global increase," he said.

In looking at the expected production scenario for the future, El-Badri took the opportunity to speak about the role of United States tight oil.

He stressed that there was no doubt it was a welcome addition. It added depth and diversity to the market, but questions remained as how sustainable it would be in the long-term.

OPEC's WOO saw US tight oil, including natural gas liquids (NGLs), reaching 4.9m b/d by 2018, before declining thereafter.

"All this leads me into the second theme of my speech — the continuing importance of the Middle East and North Africa (MENA) in helping meet future global oil and energy demand."

El-Bardi said that over the years, the MENA region's geographic position — and its abundant natural resources — had given it immense strategic importance. The region had been, and remained, central in keeping energy supplies moving to all corners of the world.

"Clearly, the region is now perfectly positioned for supplying this ever-expanding Asian oil and gas demand centre. And there is no doubt that the region has the resources to continue to play a major role in providing energy supplies, ensuring energy security and contributing to market stability for the foreseeable future," he maintained.

In giving figures, El-Badri said the region held around 865 billion b of proven crude oil reserves and 86 trillion cubic metres of proven gas deposits. This represented about 58 per cent and 43 per cent of the global totals, respectively. The majority of this was also to be found in OPEC Member Countries.

In 2012, he continued, the region produced over 31m b/d of liquids and more than 750bn cu m of natural gas, with a significant part of this provided as export to the world.

Looking ahead, OPEC's WOO expected that crude and product exports from the MENA region would increase from just over 22m b/d to close to 28m b/d between 2012 and 2035.

"And, of course, as everyone here this evening knows, gas exports are expected to expand significantly too," added El-Badri.

He said that taking all this into account, it was clear that the energy market outlook was a favourable one.

"Demand is set to increase, resources are available, and the MENA region is strategically well-placed to supply the world with energy," he professed.

However, the OPEC Secretary General went on to say that no one could make precise predictions about the future.

"History tells us that things rarely stay the same and the market and its stakeholders will have to evolve to ever-changing circumstances in the years ahead.

"There is no doubt that the future path for the industry will be marked with many challenges and uncertainties — the third theme of this evening."

El-Badri stated that one specific challenge was geopolitics. "We all know geopolitical events can have an impact on the oil market and raise questions about energy security. Some people might like to try to keep geopolitical issues out of the energy business. But they are often inseparable."

He said that over the past few years they had seen many geopolitical events impact the oil market. These included the instability in Iraq, international sanctions on Iran, uprisings in Libya, Egypt and Tunisia, instability in parts of Nigeria, conflict in Syria, and unrest in other countries, such as Yemen and Somalia.

"Many of these are still with us in 2014. Of course, in

the past month we witnessed unexpected developments between Russia and Ukraine," he affirmed.

El-Badri said that there had been concerns that the latter mentioned crisis could lead to interruptions of Russian oil and gas supplies to Europe. It had also raised some questions as to whether additional supplies could be sourced from the MENA region.

Energy a global commodity

"However, supplies from Russia have kept flowing. And Ukraine remains a key transit country. I hope this continues. It is essential to keep energy flowing — even if political tensions exist. Energy is a global commodity. It drives our industries and businesses; it transports our people and commercial goods; and it is essential to everything we do," he maintained.

El-Badri said that to help manage the impact of such challenges, the oil market needed to be able to have a degree of flexibility, for example, through spare capacity and stocks.

"We need to work together and provide the market with some direction — and, hopefully, a certain degree of stability. And in this, OPEC continues to play a vital role," he declared.

El-Badri said that, obviously, there were also many other uncertainties for the market to factor in and accommodate. "For example, the global economy — its health is vital to our energy future. And vice versa."

The global economic situation, he said, currently offered up a mixed picture. "We continue to see an ongoing recovery in the OECD. But recent events in Ukraine, as well as a slight slowdown in a number of emerging economies, present challenges."

Other uncertainties, he continued, were broad and varied. They included the potential impact of the United Nations climate change negotiations; the role of financial markets and oil market speculation; some consuming country energy policies; a shortage of human capital; advances in technology; rising costs; and severe weather.

"At present, we see the oil market as well-balanced. Yes, there are challenges. But we feel these are currently being absorbed by the market. Supply is meeting demand, and prices have been stable," he contended.

Nonetheless, said El-Badri, OPEC needed to remain vigilant. In an industry where upstream projects were capital-intensive and long-term in nature, "we need to recognize that any uncertainties can put investments in oil exploration and production projects at risk — which, in turn, can threaten future supply."

Before giving his main address, El-Badri paid tribute to Abdullah Bin Hamad Al-Attiyah, Qatar's former long-standing Energy and Industry Minister, and a familiar face at past OPEC Conferences, in whose name the awards were being given.

He said his own personal acquaintance with Al-Attiyah went back many decades.

"His achievements over the years are ones to be extremely proud of. In Qatar, he has been a driving force behind the country's transformation into one of the world's major energy hubs.

"At OPEC too, he played a prominent role in helping the Organization through some difficult times. He has been able to use his charm and humour to bring people together. And he has been able to broker solutions, when there has been discord," commented El-Badri

"It is appropriate then, that the awards given tonight recognize the hard work of other people associated with the industry," he added.

Abdullah Bin Hamad Al-Attiyah (c) and Dr Aldo Flores-Quiroga (r).

L–r: Abdalla Salem El-Badri, Abdullah Bin Hamad Al-Attiyah and Nobuo Tanaka.

OPEC hosts workshop on financial energy markets

OPEC, in collaboration with the International Energy Agency (IEA) and the Riyadh-based International Energy Forum (IEF), jointly hosted the fourth high-level technical workshop on the interaction between physical and financial energy markets at the end of March.

Held in the Austrian capital, at the Vienna Marriott Hotel, the event brought together a broad range of experts from different government agencies, leading oil industry actors and investors, as well as experts from academia and the financial and regulatory systems of developed and emerging markets.

In five sessions spread out over the course of the day, participants on moderated panels discussed the manifold interactions between the physical and financial energy markets, the different causes and drivers of price volatility and market instability, and the various challenges and issues faced by energy stakeholders worldwide.

Varying general perspectives

Held under the *Chatham House rule,* the one-day workshop was characterized by fruitful and open discussions on complex and rapidly evolving matters, particularly with regard to energy commodities.

Discussions included a special focus on the role of banks as financial actors, as well as a review of the long-term consequences of the repeal of the Glass-Steagall Act in the United States in 1999 (which removed restrictions on the affiliation between banks and securities).

Throughout the sessions, delegates to the workshop made various important observations, including the fact that short-term volatility in financial markets had eased significantly in recent years and that longer term prices on the back end of the forward curve were also more stable.

However, it was also stressed that some uncertainties, regarding both fundamental and non-fundamental factors, continued to exist in the markets. This, according to some speakers, has resulted in more volatile spreads between spot and long-term crude prices.

In addition, some of the sessions during the workshop noted the changes in commodity investment strategies that have been witnessed over the last ten years, particularly on the part of large commodity traders. The

The Marriott Hotel in Vienna was the venue for the workshop.

Delegates from the three organizations — OPEC, the IEA and the IEF — seen during their one-day workshop.

sessions also looked at the progress made in regulatory reform efforts in many developed countries.

Presentations during the workshop also considered the many efforts currently being made in Asia to develop oil futures markets that can reflect regional supply/demand fundamentals and which can improve liquidity, broaden participation by international investors and improve physical delivery of energy commodities.

Specific session discussions

The five sessions were all well-attended and elicited many interesting and informative comments.

In the first session, executives from some of the great global commodity trading houses — such as Gunvor, Mistubishi and Cargill — discussed recent oil market developments and the role of commodity trading in oil price formation. The themes considered by the experts included the important differentiation between the role of commodity trading houses and other market players (such as banks).

In the second session, representatives from various other firms working in the energy sector — such as BP, Mercuria, Argus and Vopak — offered presentations describing different market trends and recent developments in crude oil pricing. Discussants also provided a detailed look at some of the regional links between pricing and oil trade flow patterns, the role of oil storage, and crude oil spreads.

Officials and other speakers during the third session proposed various regulatory changes for commodity markets. The subsequent discussion focused on aspects of recently proposed legislation from the European Union on financial commodity benchmarks.

In the fourth session, speakers looked at the history and evolving role of banks and other financial institutions working in the physical commodity markets. The discussion included an assessment of the implications of these changes for proper market functioning and a look at the potential impact of regulatory reform on the financial markets.

In the fifth and final session — a roundtable discussion with members of the Futures Industry Association, the International Organizations of Securities Commissions and Platts — discussants focused on various emerging issues regarding oil market functioning, the implementation and impact of the principles of oil price reporting agencies, and the evolving role of exchanges, swap execution facilities and other trading platforms.

The event was well-attended and the discussions throughout the day were engaging and informative. Discussions built upon the many insights gained from the previous three workshops, which were held in London in 2010, and Vienna in 2011 and 2013.

Overall, the workshop helped to remind participants of the shared and common concerns of all stakeholders in the physical and financial energy markets.

OPEC, Russia hold second Energy Dialogue technical meeting

OPEC and the Russian Federation held their second Energy Dialogue high-level technical meeting in Vienna towards the end of March.

Officials from the two sides met at the OPEC Secretariat over two days to consolidate progress already made and further strengthen ties under the umbrella of the Dialogue.

The first high-level technical meeting of the Dialogue was hosted by Russia in October last year and the third such meeting is due to take place in the Austrian capital in September this year.

In welcoming remarks, Dr Omar Abdul-Hamid, Director of OPEC's Research Division, pointed out that both OPEC and Russia had much in common in terms of interests and challenges.

"We are both major oil producers, exporters and investors in the industry. And we are equally affected by uncertainties in the global economy, energy policy trends and sectoral and regional issues, including the fast-changing tight oil and shale gas supply with its multi-layer effects. These topics will continue to require our attention in the upcoming years," he affirmed.

"We both gain through sharing our short-, medium- and long-term analyses and examining their potential impact on the oil market from our particular perspectives. We are looking forward to valuable exchanges on these topics," he added.

Following introductory remarks by Oswaldo Tapia, Head of OPEC's Energy Studies Department, and Talyat Aliev, from the Russian Ministry of Energy, the meeting's three sessions looked at the medium- to long-term oil and energy outlooks; tight oil and shale gas developments; and downstream developments.

Delegates to the technical meeting take time out for a group photograph.

Visit our website

www.opec.org

Using the sun's heat to get out oil

A unique coupling between alternative energy and crude oil should prove to be a win-win situation for OPEC Member Country Kuwait, which may become a model for other countries in the Middle East and around the world looking at 'greener' solar enhanced oil recovery.

By Maureen MacNeill

The same sun which fed the plants that decomposed and were pressed and heated for millions of years to eventually become crude oil is now going to be used to get that crude out.

GlassPoint, a young California-based company, announced in mid-March that it is establishing a new office in Kuwait from which it will offer solar technology for application in the country's large heavy oil fields. The technology not only offers cheaper and less polluting enhanced oil recovery (EOR), but potentially a lot of new jobs too.

"As we've proven in Oman, solar steam is a viable alternative to natural gas for enhanced oil recovery. This is especially relevant in Kuwait because meeting Kuwait's goals for heavy oil production will require burning more natural gas for EOR than Kuwait currently burns for power generation," GlassPoint Chief Executive Officer, Rod McGregor, said in a statement.

"Kuwait represents one of the largest market opportunities for solar-powered oil production worldwide."

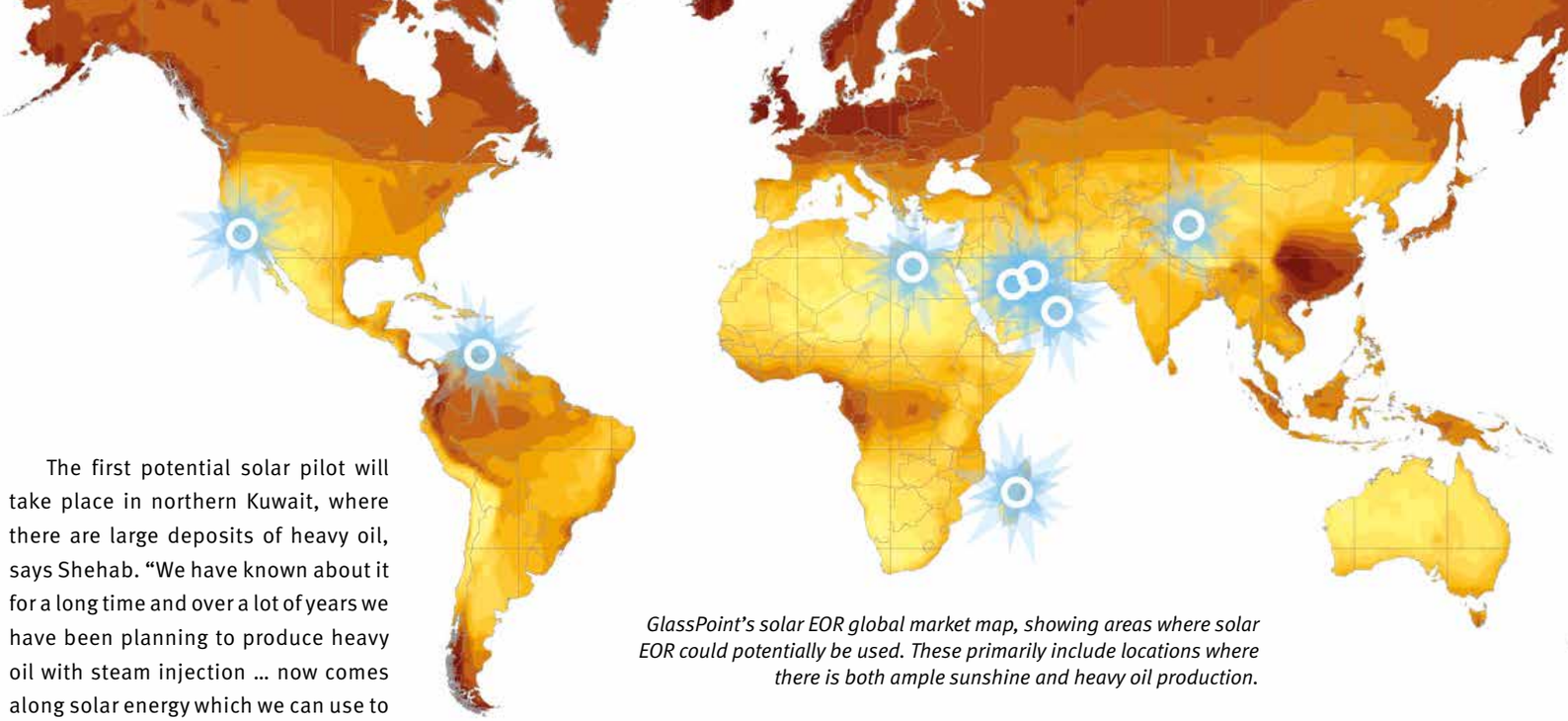
Kuwait got involved with the company about seven months ago, says Abdul Hussain Shehab, who was appointed the company's country chairman. The Kuwait oil industry veteran and former Deputy Managing Director of state oil producer Kuwait Oil Company (KOC) earlier led the initiation of KOC's first steam-flood project to produce heavy oil in collaboration with Saudi Arabia and Chevron in the Neutral Zone.

"The company approached me, and as you know there's a lot of sunshine here and a lot of heavy oil, so we started up."

Large deposits of heavy oil

Although Kuwait has been involved in continuous heat injection EOR for some time, it has not used solar.

The glasshouse enclosure protects the mirrors and moving parts from the high levels of sand and dust common in oil field environments, much of which are found in desert locations, while at the same time delivering steam at a cost that is competitive with gas-fired steam generators.



GlassPoint's solar EOR global market map, showing areas where solar EOR could potentially be used. These primarily include locations where there is both ample sunshine and heavy oil production.

The first potential solar pilot will take place in northern Kuwait, where there are large deposits of heavy oil, says Shehab. "We have known about it for a long time and over a lot of years we have been planning to produce heavy oil with steam injection … now comes along solar energy which we can use to produce the steam.

"The numbers are truly staggering," according to Daniel Palmer, the company's Vice President of Sales in the Middle East. "To put it into perspective, the ramp-up of Kuwait's heavy oil production … I think it's fair to say about half a million barrels a day is a figure that's been used."

The system consists of an enclosed trough steam generator with large parabolic mirrors sealed inside a glasshouse. The structure protects the solar collectors from sand and dust, and is equipped with an automated roof-washing unit to maintain performance. Wash water from the cleaning robot is captured, filtered and re-used to minimize consumption.

Dehumidified and filtered air injected into the glasshouse maintains an internal pressure that is higher than the ambient air to prevent dust and sand from entering. The company claims the system can reduce EOR gas consumption by up to 80 per cent.

"GlassPoint's enclosed trough technology takes proven concentrated solar power trough designs and pairs them with a commercially proven agricultural glasshouse, making a system uniquely suited for desert oil field applications," says Palmer.

"… the technology was designed to integrate seamlessly with existing oil field infrastructure. (The) steam generators accept exactly the same feed water quality and generate exactly the same steam conditions as a gas-fired unit once through the steam generator."

The glasshouse structure is particularly well suited for Middle East deserts and countries like Kuwait with high

The huge, parabolic mirrors track the sun throughout the day and reflect the sunlight on to a receiver pipe carrying water. The heat from the sun boils the water, generating emissions-free steam for EOR.

The system underwent extreme weather conditions in its pilot and functioned normally.

levels of wind and sand. Kuwait experiences an average of 20 or so dust storms each year.

"In April last year, GlassPoint's system in Oman continued to operate during a severe dust storm, producing the rated output of steam. Overnight our washing unit cleaned the glasshouse completely restoring performance to its pre-storm levels," says Palmer.

In addition to being financially attractive, the technology is good news for the environment.

Heavy oil has always had a bad name regarding climate change, and in places that have abundant sunshine, that no longer needs to be the case, states Palmer.

Palmer, who draws on more than 20 years of experience with Schlumberger, the world's largest oil field service provider, will drive GlassPoint's expansion across the Middle East.

The Oman project — the Middle East's first solar EOR project — is attracting a lot of attention. GlassPoint commissioned a 7 MW solar EOR (pilot) project with PDO at its Amal West oil field in southern Oman in early 2013. The system now generates an average of over 50 tonnes of emissions-free steam daily and recently completed its first year of operations exceeding contracted performance targets.

And jobs? The figures on employment creation in Oman, are stunning, says Palmer. "We're looking at potential hundreds of thousands of jobs if it is used for the majority of Oman's EOR."

In fact, a recently published Ernst and Young report on the potential benefits of large-scale deployment of solar EOR in Oman concluded that full-scale deployment by the end of 2023 could create 212,000 permanent jobs, redirect more than half a billion cubic feet of gas per day and contribute more than $12 billion to Omani GDP over the next decade.

Creating jobs

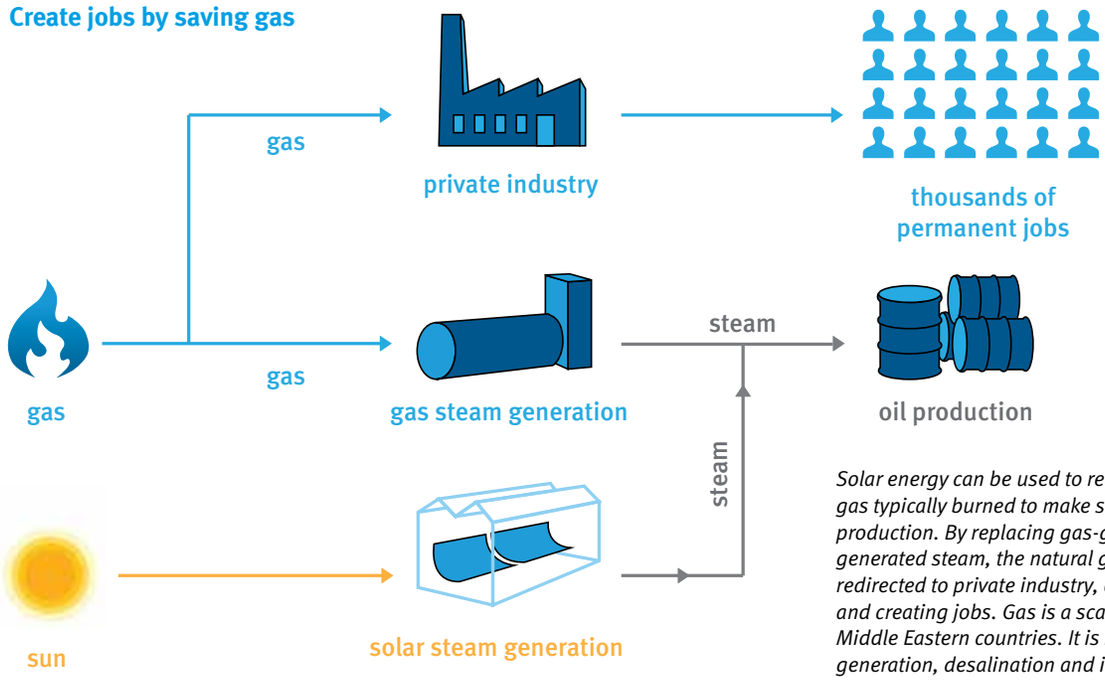
"Ernst and Young's forecast includes jobs generated from the potential solar factory and those from our suppliers, induced jobs created as a result of increased economic activity, as well as jobs created from redirecting gas away from oil production to industrial development," says Palmer.

A technical paper published by the Society of Petroleum Engineers (SPE) — presented the first week of April at the SPE EOR Technical Conference in Muscat, Oman — also highlights the project's success, validating its technical feasibility for EOR in desert oil fields. It contributes new performance data and lessons learned from the first year of operation at the joint project.

"The expertise and lessons learned from the pilot will enable us to rapidly scale and integrate further solar EOR projects in oil fields throughout Oman and the Gulf region," Palmer states in a company press release.

With declining production at existing reservoirs, it is more important than ever to maximize production from existing resources. The company's solar steam generators provide customers in the oil and gas industry with a cost-effective source of thermal energy for EOR.

Create jobs by saving gas



Solar energy can be used to reduce the amount of natural gas typically burned to make steam used in heavy oil production. By replacing gas-generated steam with solar generated steam, the natural gas saved can then be redirected to private industry, driving economic growth and creating jobs. Gas is a scarce commodity in many Middle Eastern countries. It is needed for electricity generation, desalination and industrial development, and these other applications must compete with EOR operations for valuable gas resources.

The company currently operates two of three solar EOR projects operating worldwide, the other being a smaller unit in California, commissioned in 2011.

A lot of places, including Kuwait, are suffering from a potential shortage of natural gas in the future, states Palmer. The gas diverted from EOR can be used for industrial development or electricity generation, added Shehab, stating that Kuwait is a net gas importer and the gas saved would be used locally.

The technology is already developed and very much commercial, says Palmer, although it hasn't been deployed on a very large scale yet.

"We hope to multiply the project in Oman by 100 on the next scale-up, so the technology … is mature and proven. It has performed very well in the last three years."

And it can be used nearly identically in every country, aside from possible slight changes in process conditions, he adds. "It really comes down to in different countries you may end up with different local supply chain options, different manufacturers, things like that.

"In general it's relatively standard, and that's been our objective — to make it so you can have a product you can buy in standard units, so it doesn't require each one to be different."

Solar EOR would cut down a great deal on the amount of pollution being created when producing heavy oil, says Palmer. To produce a barrel of heavy oil using steam (thermal), somewhere between 20–30 per cent of the energy gained from that barrel is burned in the form of natural gas.

"And that obviously produces a lot of CO_2 emissions… and other emissions as well, you know, SO_2, NOx and stuff like that. By using solar you eliminate all that.

"Historically, a barrel of oil produced with thermal EOR was considered a much more polluting barrel, creating a lot more CO_2 than a normal, light oil barrel. But using solar thermal you basically give out about the same CO_2 emissions per barrel as you would with a conventional barrel."

Kuwait is struggling with environmental issues, as are many countries. Shehab said that many areas of Kuwait have been complaining bitterly to the National Assembly that the environment is polluted. Most of these complaints are linked to the oil industry, he adds. "This process of using the sun's energy could at least alleviate some of the problems that we already have."

The founders of the budding company — started in 2009 — were originally looking at solar power for process heat which could be used in any kind of industrial application, says Palmer. The biggest problem with solar power is storing energy for when you need it, he says. "Most industrial processes or domestic applications kind

of want energy on demand. You need to be able to store it somehow, because otherwise you don't have it when the sun is not shining."

The small team started to realize that solar EOR was an incredible application because reservoirs act like big storage tanks.

"It's the one application where the storage problem is solved for us by virtue of the process," says Palmer. "You inject steam into the reservoir over many years and it forms a large steam chamber … there's a huge amount of steam stored under pressure in the reservoir and that is actually an enormous store of energy."

"When you do a big steam flood, you are basically heating up a cubic mile of rock and it doesn't matter what time of day you inject steam or whether you inject more or less on a day-to-day basis. All that matters is the cumulative amount of energy you put in," says Palmer.

The company's current areas of focus are Oman, Kuwait and California. "After that, there's a whole host of countries, both OPEC and non-OPEC, that are good potential targets for this … anywhere where you have the combination of heavy oil, high levels of sunshine and gas constraints."

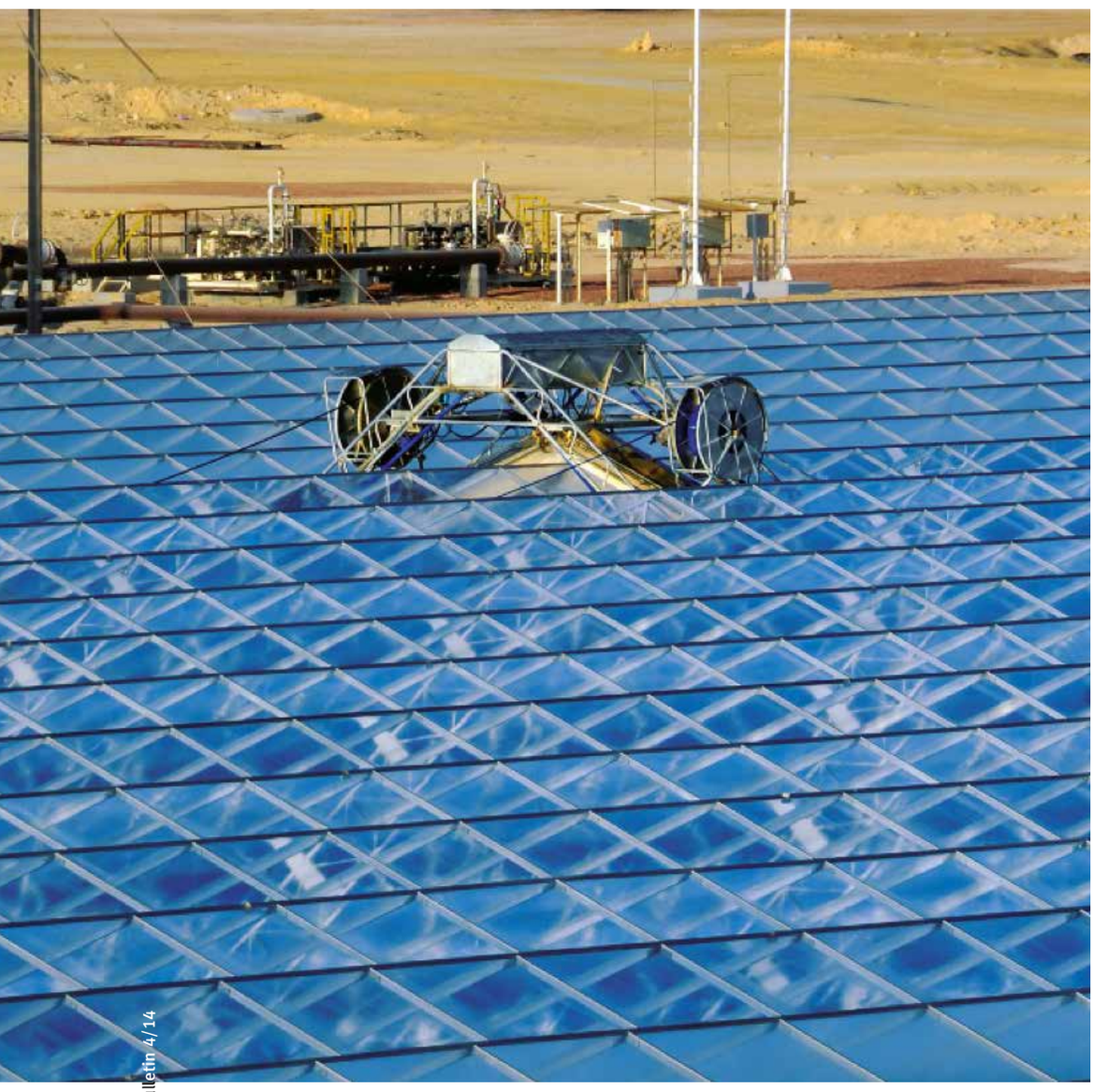
Fit for solar EOR

Thermal steam injection is the most common method used for EOR worldwide and is best suited for reservoirs less than 4,000 feet deep with highly viscous oil, says Palmer. In addition, ideal locations are desert-like spots closer to the equator. "There are a lot of very large oil producing regions either close to the equator or in very arid areas and those are potential good applications."

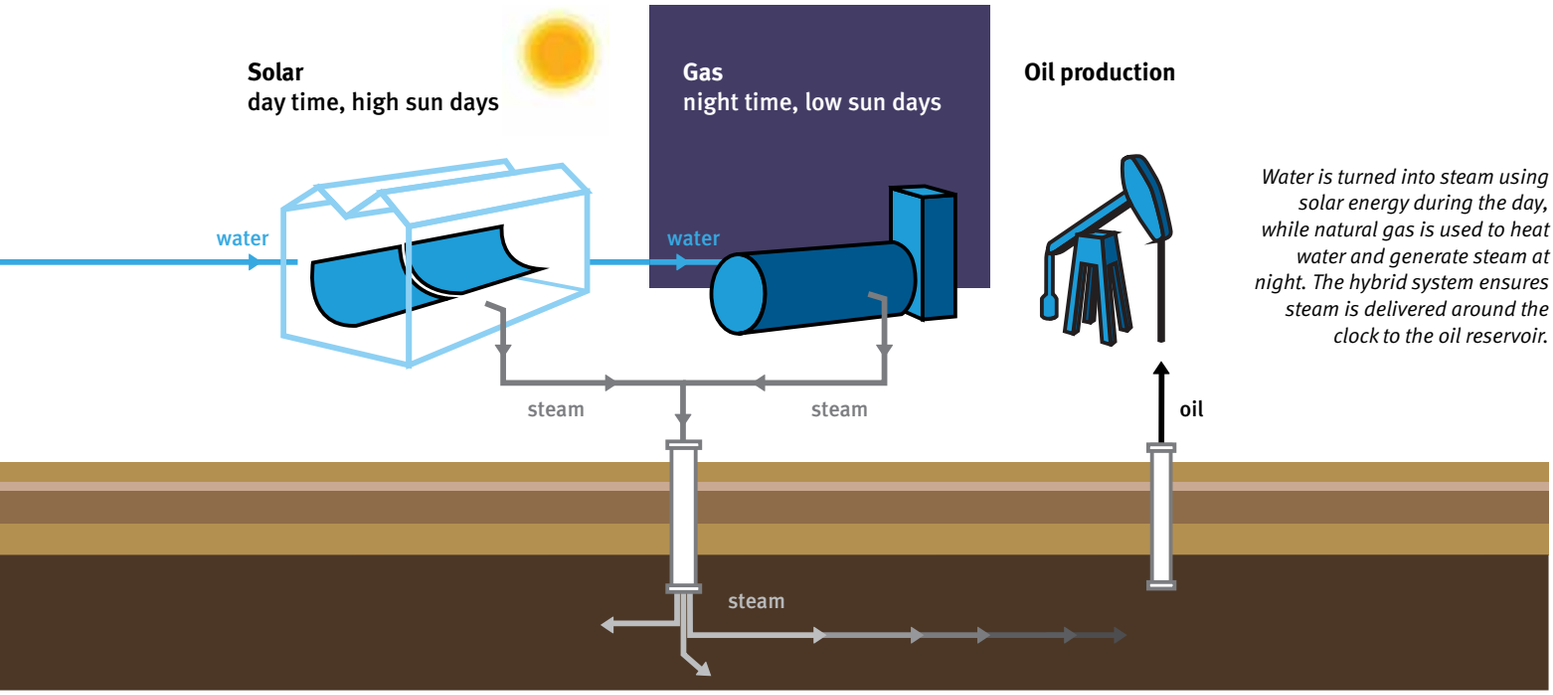
The Gulf countries, such as Kuwait and Saudi Arabia, are a natural fit for solar EOR. Other regions well-suited for solar EOR include the Southwest United States, as well as some parts of Asia and North Africa, says Palmer.

He adds that even in the US where gas is very cheap, the technology could be interesting. "When you add in the effects of certain cap-and-trade programmes and carbon credits it can become attractive in certain states in the US.

"The numbers are truly staggering. Every year globally 1.7 trillion cubic feet of gas gets used for thermal EOR … that's a very, very large amount of gas," says Palmer. If that gas is replaced with solar, by what would be several of the largest



The system includes a fully automated robotic cleaning system that automatically washes the roof of the glasshouse at night. Each robot can wash eight acres of glasshouse in a single night shift. Keeping the glass clean maximizes performance; the sun's energy is not weakened by passing through dust or dirt. The wash water is captured, filtered and re-used.



Water is turned into steam using solar energy during the day, while natural gas is used to heat water and generate steam at night. The hybrid system ensures steam is delivered around the clock to the oil reservoir.

solar installations in the world, solar EOR could represent a way to expand the world's oil reserves.

"You can produce a reservoir for longer, it means you have a higher recovery factor. Ultimately it's a way of increasing reserves, just by virtue of being able to produce heavy oil with a fraction of the gas, and secondly producing that oil for longer when it might not be economic to use gas."

The primary recovery factor of heavy oil produced without thermal is very low; only about five to eight per cent. "When you go to thermal methods, you might get 50 to 60 or even 70 per cent," says Palmer.

"On most people's charts of reserves, heavy oil is the big future supply, but the economics have always been challenging. So I think if we can improve the economics using solar, it can definitely bring more reserves (worldwide) in the future … there's no doubt about that."

The technology might be particularly interesting to OPEC Members, he says. "A lot of OPEC Countries have very large reserves of heavy oil … with solar you have a kind of guaranteed price of energy once you've built the facility because the sun is very predictable in terms of hours of sunshine. The second thing is, once you've established your solar facilities, the operating cost is very, very low."

Shehab is even more unequivocal: "It will add to the power of OPEC," he says.

All images in this article courtesy GlassPoint.

Solar EOR could add to the power of OPEC. Many OPEC countries have oil-producing facilities in desert areas, and a higher recovery factor is ultimately a way of increasing reserves.

New GCC statistical centre to provide valuable support for decision-makers

The importance of statistical data and information and the role it plays in supporting decision-makers and policy planners has been given a boost in the Gulf region with the inauguration in Muscat, Oman, in April of the new Gulf Cooperation Council (GCC) statistical centre.

The brainchild of GCC member Kuwait, according to Hind Al-Sabeeh, Kuwait's Minister of State for Planning and Development, who is also Minister of Social Affairs and Labour, the centre would provide accurate and credible statistics about different domains to help support the formulation of effective strategies for achieving sustainable development.

"The idea of this centre was initiated by Kuwait and supported by the Sultanate of Oman," she told the *Kuwait News Agency (KUNA)* on the sidelines of the inauguration ceremony.

"The centre will be of a great importance to GCC decision-makers," she stressed, adding that it would provide a comprehensive view and evaluation of the situation in GCC countries.

The centre's inauguration, which took place at Al Bustan Palace in Muscat, was held under the patronage of Yousef Bin Alawi Bin Abdullah, Oman's Minister Responsible for Foreign Affairs. The ceremony was attended by government officials, diplomatic mission representatives and statistical experts from GCC member states, including GCC Secretary General, Dr Abdullatif Al Zayani, and Sabir bin Said Al Harbi, Director General of GCC-Stat.

Another milestone

"The establishment of the centre is yet another milestone in the collaborative efforts by GCC member states and it is considered a step closer to strengthening the long-rooted ties between GCC nations," Abdullah told delegates at the ceremony.

Shutterstock

"The centre will provide statistical data and information that will allow official authorities and decision-makers to make informed plans that are based on prescribed and official facts and figures," he affirmed.

Al Zayani, in his address, highlighted the valuable contribution made by the authorities in Oman towards the continuing success of the collaborative efforts made by GCC member states.

Comprehensive achievements

"The Sultanate of Oman shows time and again its tireless efforts to support the collaborative work done by GCC countries and I am personally proud of the developmental achievements that we all see in the Sultanate, which have been synonymous with the comprehensive developmental achievements in all sectors," he stated.

"We believe in the importance of statistical data and information and the role that it plays in supporting decision-makers and policy planners," he affirmed.

The GCC head pointed out that the respective GCC authorities depended on such data to lay down comprehensive developmental plans in the region.

"They are working together to set strategies, programmes and regulations that will best serve the statistical work in the GCC region. This centre will definitely complement the collaborative efforts by GCC member states, not only in the statistical field, but also in other matters that depend on statistical facts and figures," he observed.

Al Harbi, during his address, agreed that the establishment of the centre represented yet another achievement of the collaborative efforts of GCC member states, stating that it aimed to showcase the sustainable socio-economic reality of the GCC region and its current status through facts and figures.

"GCC-Stat was founded to serve as the official centre for pan-GCC statistics. It aspires to establish a complete and comprehensive statistical system that provides for the needs of the current GCC socio-economic status and meets the requirements of future developments.

"We are very proud to have such a well-based, strong statistical system that is capable of functioning in a professional and efficient way. Today we see the six GCC member states joining hands to put their national strategies and regulations relating to statistics within the general framework of the GCC umbrella. The establishment of GCC-Stat is yet more proof of the continuous collaborative efforts by these countries who are aiming for the prosperity of their respective nations."

Al-Harbi maintained that having access to credible statistics and prescribed facts and figures by official channels allowed authorities and decision-makers to take suitable steps and decisions integral to the development of their respective nations in all fields.

In highlighting the achievements of GCC-Stat since it began operations in May 2013, he stated that in its first year it had been extremely proactive regionally and internationally, laying the foundation of bilateral ties and the establishment of strong relations with international organizations such as the International Monetary Fund (IMF) and the UNESCO Institute for Statistics (UIS).

The idea for the statistics centre originated in 2005 when Kuwait's Planning Ministry, in cooperation with the IMF, conducted a comprehensive study on such a proposal.

One year later, Kuwait presented the proposal, including a complete vision about the future centre and its administrative structure and budget, to the governors of the GCC central banks, who included the project in the GCC's development plans.

In September 2011, the GCC Ministerial Council approved the proposal and the centre's charter was endorsed by GCC leaders at their summit in December 2012.

International forum

A two-day international forum on transforming the statistical system in GCC countries accompanied the official launch of the GCC-Stat centre.

Participants in the forum included statistical experts and researchers, economists and high-level professionals in the statistics sector from across the GCC member states.

Based in Muscat, GCC-Stat is the official source for statistical data, information and comparative statistics representing GCC member states as a unified body.

The centre is the official source for pan-GCC statistical information and it works closely with various organizations and official departments to develop the statics and data collection in the six GCC member states, which comprise OPEC Member Countries Kuwait, Qatar, Saudi Arabia and the United Arab Emirates (UAE), in addition to Oman and Bahrain.

The GCC-Stat board of directors has approved ten projects within its work plan for 2014.

Total to proceed with Angolan project after reducing investment costs

After managing to save some $4 billion on its initial cost estimates, France's oil major, Total, has now decided to proceed with the development of its deepwater Kaombo development, located offshore Angola.

Arnaud Breuillac, the company's new Exploration and Production Head, appointed in January this year, said the decision had been made after the company managed to bring the investment cost down to around $16bn.

Production at Kaombo was now slated to begin at the end of 2017, peaking at 230,000 b/d, he said.

"When one looks at where the $4bn was saved, it offers a model for cost-cutting that can be applied to our other projects, to help us contain the inflation we have seen over the past few years," he noted.

According to Breuillac, project service costs had risen by up to eight per cent annually since 2011, which had affected companies' operating margins.

He pointed out that the initial invesment cost of Kaombo was $15bn, but this had risen by around 25 per cent after the tendering process. At $20bn, the price of the scheme was unsustainable for the company.

Service costs a main challenge

Breuillac stressed that accommodating the general increase in service costs in the industry had become one of the main challenges for oil companies investing in the petroleum sector.

He pointed out that around half of the savings in the reassessed investment for Kaombo had come from revisiting the specifications required for the project.

"We had to think thoroughly about whether our level of requirements, and what we had asked to build, was not a bit too much compared with our needs," he was quoted as saying by Platts news service.

Total reportedly produces around 186,000 b/d of crude oil in OPEC Member Angola, out of a total output on the African continent of 600,000 b/d.

Kaombo will be the first development in Angola's offshore block 32 where Total is operator with a 30 per cent interest. Its partners are the Angolan state oil firm, Sonangol (20 per cent), China Sonangol Petroleum (20 per cent), ExxonMobil (15 per cent), Marathon Oil (10 per cent), and Portugal's Galp Energia (five per cent).

Breuillac disclosed that Total's global oil production in 2013 stood at 2.299 million barrels/day of oil equivalent, slightly lower than in the previous years. It aimed to reach output of 3m boe/d by 2017.

He noted that after making the most substantial investments in the firm's history over the past three years, Total planned to invest $26bn in 2014, down by $2bn from its 2013 spending peak of $28bn.

However, the official warned that if service costs continued to spiral higher, more investments would be put at risk in the future.

High service costs in the oil industry have become one of the main challenges for investing oil companies.

New oil contract model finalized: Iran looks to sanctions being lifted

Iran has put the final touches to its new oil contract model, designed to attract international companies back to the OPEC Member Country once international sanctions are lifted, according to the Head of the Petroleum Ministry's Oil Contracts Revision Committee.

Quoted by Iran's Shana News Agency, Mehdi Hosseini stated that the contract model had been finalized in terms of expertise. He said the Iran Petroleum Contract (IPC) would be presented to a conference in London in November this year.

"In order for international companies to be able to invest in Iranian projects, the sanctions must be lifted so that they would be able to easily invest in Iran's oil projects," observed Hosseini.

He maintained that major international companies would definitely return and invest in Iran at such a time the sanctions had been lifted.

The IPC is set to replace the "buy-back" contract which is no longer considered attractive to foreign companies.

Under a buyback deal, the host government agrees to pay the contractor an agreed price for all volumes of hydrocarbons the contractor produces.

But under the proposed IPC, the National Iranian Oil Company (NIOC) will set up joint ventures for crude oil and gas production with international companies, who would be paid with a share of the output.

Meanwhile, in an interview with Shana, NIOC Managing Director, Rokneddin Javadi, has spoken of his country's plans to increase both domestic crude oil and gas production. He disclosed that the country's current oil production capacity stood at 3.85 million barrels/day, while average output amounted to 2.85m b/d.

Javadi said that with the necessary conditions in place, Iran hoped to be in a position to be able to produce 4m b/d of crude oil by March 2015.

He added that current crude oil exports were higher by 40 per cent over those achieved in August and September last year.

Ongoing negotiations under the Geneva interim agreement, reached last year between Iran and the P5+1 countries, could result in international sanctions against Iran's oil exports being lifted in the near future.

Javadi noted that in the case restrictions on Iran's oil sales were relaxed, "good markets will be awaiting Iran's oil." He explained that political overtures and the interim agreement reached had prepared the proper grounds for negotiations and interaction between Iran and the other countries involved.

"Foreign countries are willing to invest in Iran's petroleum industry and delegates' visits to Iran, soon after the Geneva accord, is proof of that," he affirmed. "They want to start talks for contracts and in the case sanctions are lifted, most of these negotiations will turn into action. But for the moment, everything is at the stage of negotiation," he added.

In the gas sector, Javadi revealed that production during the winter months had risen to around 640 million cubic metres/day, but due to the high level of domestic consumption, there were still shortages.

However, he announced that the Iran would increase its domestic production of natural gas by some 100m cm/d by the end of the current Iranian year (started in March) as new projects came onstream in the country's various gas fields.

"This year, with the implementation of NIOC's envisaged plans, Iran's natural gas output will leap," Shana quoted Javadi as saying. He said that gas exports were required for Iran's economic development and they must be followed up on seriously.

"We have had agreements with Iraq and we think that gas exports to Iraq will start this year," he affirmed.

He stated that liquefied natural gas (LNG) production and exports, as another contributor to the country's revenue mix, was a priority for Iran.

But he said its realization depended on a chain of factors. Iran's LNG project was currently on hold. More than $2.5 billion dollars had so far been spent on the LNG project and another $2.5-6bn was estimated still required.

"Under such circumstances, we have decided to assign the task of assessment and feasibility of the project, as well as estimation of costs, to a professional international group so that we can take action accordingly," he added.

West Qurna-2 expansion will lift Iraqi oil production near to target

Iraqi Oil Minister, Abdul-Kareem Luaibi Bahedh.

Iraq's planned goal to be in a position to produce four million barrels/day of crude oil by the end of 2014 has been given a welcome boost with the start-up of commercial output at the country's giant West Qurna-2 field by Russia's Lukoil.

Iraqi Oil Minister, Abdul-Kareem Luaibi Bahedh, said at a ceremony to inaugurate the field that output from West Qurna-2, currently standing at 120,000 b/d, would rise to 400,000 b/d by the end of 2014, helping the country reach its total production target for the year.

In February, the OPEC Member Country's total oil production stood at 3.5 million b/d.

The West Qurna-2 field is one of several concessions Iraq is planning to develop to boost its oil sector and support the Iraqi economy, which is recovering after years of conflict and instability.

West Qurna-2 has estimated recoverable reserves of around 14 billion barrels and present output comes from the field's Mishrif formation. After reaching 400,000 b/d by the end of the year, the next phase involves boosting production to 550,000 b/d.

Then, with the development of the field's Yamama formation, output is expected to hit 1.2 million b/d by the end of 2017.

The production start-up ceremony was also attended by Iraq's Deputy Prime Minister Hussain Al-Shahristani and Russia's Deputy Prime Minister Arkady Dvorkovich.

Lukoil President, Vagit Alekperov, referred to the project as "a historical moment" for Iraq, Lukoil and Russia-Iraq relations. He pointed out that the scheme had been delivered virtually on time and within budget. Lukoil had been planning to start production at West Qurna-2 at the end of last year.

"The start of production at West Qurna-2 is strategically important for Lukoil," he stressed. The company, which is Russia's number two oil company, saw its production rise by 1.1 per cent last year and is aiming for a 1.5 per cent rise in 2014, with support from West Qurna-2.

Andrei Kuzyayev, President of Lukoil Overseas, said at a press conference that total spending on the scheme over the 25-year life of the contract was estimated at $38-40bn.

Russian President, Vladimir Putin, in a letter to Iraq's Prime Minister, Nouri Al-Maliki, said the West Qurna-2 production start-up was an important step in the development of mutually profitable practical cooperation between the two countries. He expressed Russia's readiness to "expand the two sides' partnership in various areas."

So far, Lukoil, which has a 75 per cent interest in West Qurna-2, has invested $3.8bn in the field. It has built a 400,000 b/d central processing facility and worked on 48 development wells. It has also provided a gas-turbine power plant, a water intake system, an export pipeline to the Tuba tank farm, where it has built additional tanks, a field camp, access roads and additional flow lines.

Lukoil is looking to further expand its activities in Iraq. It is in talks over the construction of a petrochemical complex for processing the associated gas from West Qurna-2 and has expressed an interest in the planned 300,000 b/d Nasiriyah integrated refinery and field development project. Lukoil is scheduled to start drilling at its Block 10 in 2016.

KOC to develop Ratqa field, KNPC to spend $35 billion on projects

In support of its plans to boost domestic crude production capacity to four million barrels/day by 2020, Kuwait is expected to sign a $4.3 billion contract later this year for the first phase of a heavy oil project at the Ratqa oilfield, situated in the north of the country.

Hashem Hashem, Chief Executive Officer of the state-owned Kuwait Oil Company (KOC), said the contract would cover the provision of facilities to produce up to 60,000 b/d of heavy crude from the Ratqa field, under the first stage of the development.

Output expected to rise

Speaking on the sidelines of an oil conference, he was quoted as saying that the deadline for bids for the engineering, procurement and construction (EPC) contract was May 11, but this may be extended. KOC would then take some time to assess all the bids before awarding the contract winner in October.

Hashem told the conference that first-stage production should be onstream by 2017 or 2018. Output was expected to rise to 120,000 b/d by 2020, with the further potential to boost output to 270,000 b/d, if required.

He disclosed that Kuwait's current crude oil production capacity stood at around 3.25m b/d, with KOC accounting for 3m b/d of that figure. Current output stood at about 3m b/d, with exports accounting for around 2m b/d.

Hashem pointed out that Kuwait's oil production came mainly from a few mature fields, dominated by the giant Burgan field in the south of the country.

He stated that the production target for 2020 would necessitate further output of 650,000 b/d, which would mainly come from the north of the country. KOC was already producing around 700,000 b/d in this region, which would be boosted by 300,000 b/d.

Another 300,000–350,000 b/d of associated light oil was expected to come from Kuwait's Jurassic gas field project, also in the north.

Meanwhile, the Kuwait National Petroleum Company (KNPC) is slated to spend $35 billion over the next five years on expansion and development projects.

Mohammed Al-Mutairi, the firm's Chief Executive Officer, listed the most important development projects as including the Clean Fuels Project, the new Al-Zour refinery, the fifth natural gas plant and the construction of new liquefied natural gas import facilities.

Hashem Hashem, Chief Executive Officer of the state-owned Kuwait Oil Company (KOC).

"These projects would help Kuwaiti products enter new international markets thanks to their high quality and competitiveness and give a push to the national economy and development in the country," he was quoted as saying at an industry exhibition by the *Kuwait News Agency*.

Kuwait aims to hike its refining capacity from 936,000 b/d to 1.415 million b/d by carrying out the Clean Fuels Project and by building the new refinery.

KNPC has reportedly already awarded three consortia schemes worth $12bn for the Clean Fuels Project, which aims to boost output at its two largest refineries — Mina Al-Ahmadi, which processes 460,000 b/d, and Mina Abdullah, which has a capacity of 270,000 b/d.

And tenders have also been issued in connection with the construction of a $16bn greenfield refinery with a capacity of 615,000 b/d, KNPC spokesman, Khaled Al-Sousi, was quoted as saying in an interview. The new plant would be one of the largest in the Middle East.

Saudi Arabia sets up new industrial investment firm

The new Saudi firm will target hand-picked industrial projects.

Saudi Arabia has set up a new firm, whose mandate is to specifically identify and invest in industrial concerns.

The Saudi Arabian cabinet has issued a royal decree forming the new firm, called the Saudi Arabian Company for Industrial Investments.

Backed by the national oil company, Saudi Aramco, together with the Saudi Arabian Basic Industries Corporation (SABIC), and the state Public Investment Fund (PIF), under the decree, the new firm's capitalization has been stipulated at two billion riyals (around $530 million).

According to a report carried by *Energy Intelligence*, the company will target hand-picked industrial projects, as part of the Kingdom's broader efforts to create jobs for its young population.

The *Saudi Press Agency (SPA)* said the mandate of the company was to identify and invest in industrial firms that are determined to be in strategic sectors.

The report pointed out that the Kingdom was aiming to develop seven industrial sectors: rubber; paints and coating; ethylene oxide and propylene oxide; polyester; silicone; automotive parts; and pharmaceuticals.

The National Industrial Clusters Development Programme (NICDP), set up by Saudi Aramco, is overseeing the promotion of these programmes.

The decree noted that in addition to investing in petrochemicals, plastics and fertilizers, the new company would target iron, steel, aluminum and other industries to achieve economic diversification. It would also "market industrial products in the Kingdom and abroad."

Saudi Aramco and its partners are investing heavily in the provision of petrochemical plants.

The $17.8 billion Petro-Rabigh integrated refinery is undergoing a second-phase expansion that will increase the plant's capacity to five million tons annually by 2016, while the $20bn Sadara plant, which is slated to produce three million tons of products a year, is expected to start production in the first quarter of 2015.

Saudi Aramco and SABIC are also jointly involved in a new project in Yanbu, which is already the home of an industrial city, two refineries and an export terminal.

UAE top choice for Arab youth for third successive year

For the third year in a row, the United Arab Emirates (UAE) has been chosen as the country in which most Arab youth would like to live.

And according to the Arab Youth Survey for 2014, commissioned by ASDA'A Burson-Marsteller, those surveyed also named the UAE as the country they would most like their own nation to be like.

Results of the survey, announced in Dubai in April, showed that the UAE proved to be the top choice out of an international list of 20 nations, beating such advanced countries as the United States, the United Kingdom, France and Germany.

"The survey, covering 16 Arab countries, showed that UAE youth are the most optimistic. Positivity has become an integral part of our identity," commented Sheikh Mohammad Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai.

Meanhile, Joseph Ghossoub, Chairman and Chief Executive Officer of the Menacom Group, the regional parent company of ASDA'A Burson-Marsteller, said: "The vision and wisdom shown by the UAE's leadership, with an emphasis on economic diversification, free market reform, technological innovation and investment in human capital, resonate around the world and clearly continue to strike a chord with Arab youth."

ASDA'A said in a statement: "The aim of this annual survey is to present evidence-based insights into the attitudes of Arab youth, providing public and private sector organizations with data and analysis to inform their decision-making and policy formation".

The 2014 survey, conducted by the international polling firm, PSB, represents the largest polling since the annual study began in 2008.

In polling 3,500 men and women aged 18 to 24, it disclosed that some 63 per cent of those interviewed in the Gulf were "very concerned" about the rise in living costs and were also worried about future unemployment levels.

In the UAE, 83 per cent of Emiratis were found to be "somewhat" to "very" concerned about rising living costs, while over 60 per cent of those polled felt the same about unemployment in the country.

Towering above the rest ... the UAE again gets the thumbs up from Arab youth.

However, the survey noted that the youth surveyed were increasingly "living in the here and now" and had high expectations from their governments.

On a regional level, some 55 per cent of the Arab youths questioned said they believed the biggest obstacle facing the Middle East going forward was civil unrest, followed by a lack of democracy and the threat of terrorism.

The Arab countries included in the survey were the six Gulf Cooperation Council member states (Kuwait, Qatar, Saudi Arabia and the UAE, Oman and Bahrain), Algeria, Iraq, Egypt, Jordan, Lebanon, Morocco, Tunisia, Libya and Yemen — with Palestine added for the first time this year. Syria was not included because of the ongoing conflict there.

Each of the face-to-face interviews took 20–30 minutes, with men and women represented equally and chosen at random.

Meanwhile, the UAE was ranked as the "happiest Arab country" and the 17th happiest in the world in the 2013 World Happiness Report, commissioned by the United Nations.

In the course of his official duties, OPEC Secretary General, Abdalla Salem El-Badri, visits, receives and holds talks with numerous dignitaries.

This section is dedicated to capturing those visits in pictures.

Left: Bernard Alvarez, Secretary General of the Bolivarian Alliance for the Peoples of Our America 'ALBA', visited Abdalla Salem El-Badri, OPEC Secretary General, on March 18, 2014.

Above: Dr Erwin Kubesch, Ambassador, Head of Department 1.5 – Organization of International Conferences & Matters Relating to International Organizations in Austria, Austrian Federal Ministry for Europe, Integration and Foreign Affairs, visited Abdalla Salem El-Badri, OPEC Secretary General, on April 1, 2014.

Left: Vladimir Voronkov, Ambassador of the Permanent Mission of the Russian Federation to the International Organizations in Vienna, visited Abdalla Salem El-Badri, OPEC Secretary General, on April 16, 2014.

Students and professional groups wanting to know more about OPEC visit the Secretariat regularly, in order to receive briefings from the Public Relations and Information Department (PRID). In some cases, PRID visits schools to give them presentations on the Organization and the oil industry. Here we feature some snapshots of such visits.

Visits

Students from Sciences Po, Paris, France, visited the OPEC Secretariat on February 26, 2014.

Students from the Österreichische Theatertechnische Gesellschaft (Austrian Theatre Technical Society), Vienna, Austria, visited OPEC on March 6, 2014.

Students from the Indian Institute of Management Calcutta, India, visited the Secretariat on March 7, 2014.

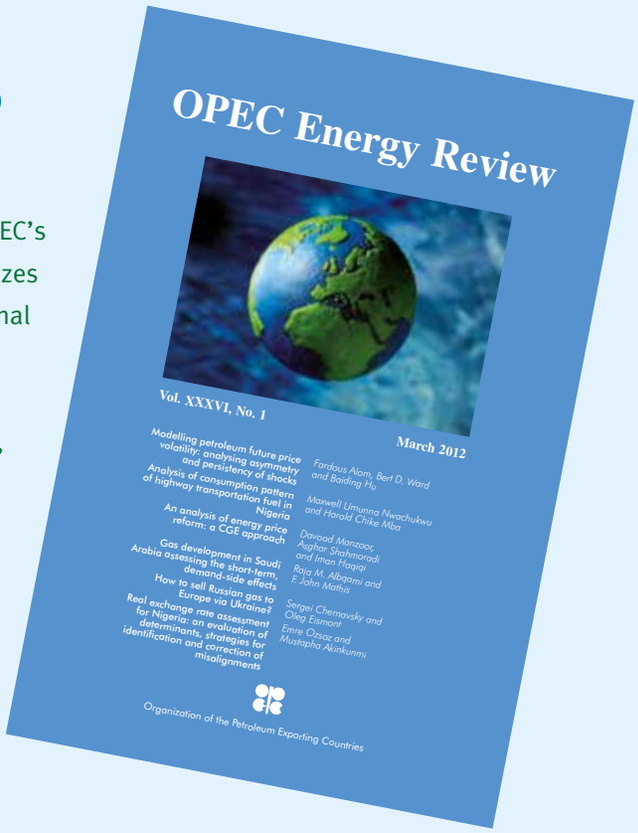
Visitors from the United States Embassy, Vienna, and the US Air War College, USA, visited the Secretariat on March 10, 2014.

Students from the Gymnasium Kundmanngasse in Vienna, Austria, visited OPEC on March 11, 2014.

Students from the Faculty of Economics and Business, Maribor, Slovenia, visited the Secretariat on March 13, 2014.

Students from the Neue Mittelschule Renngasse, Vienna, Austria, visited OPEC on March 17, 2014.

Call for papers



We invite you to submit a well researched scholarly paper for publication in OPEC's relaunched quarterly academic journal, the OPEC Energy Review, which specializes in the fields of energy economics, law, policy, the environment and international relations.

The OPEC Energy Review, which is prepared by the OPEC Secretariat in Vienna, is distributed to universities, research institutes and other centres of learning across the world.

The criteria for publication in the OPEC Energy Review are that the material is the product of research in an area of interest and value to the readership, and that it is presented in an objective and balanced manner. Submission of a paper will be held to imply that it contains original, unpublished work and is not being submitted for publication elsewhere. Manuscripts are evaluated by referees.

Abstracts of up to 150 words should be included. In the covering letter, or on a separate sheet, the following details of the principal author should be given: full name (and, if different, desired name for publication purposes), title, affiliation, full postal address, e-mail address and telephone numbers. Similar details should be provided for all co-authors. Authors will retain copyright to their papers, while giving the Publishers' Exclusive Licence to publish.

Manuscripts should be written in clear English and not exceed 8,000 words. Submissions should be done electronically either via e-mail attachment or compact disc (CD). Tables and figures should carry titles, relate directly to the text and be easily comprehensible. Mathematical expressions should be clearly presented, with equations numbered.

Endnotes should be indicated in the text consecutively, with superscript numbers, and should be explained in a list at the end of the text. Reference citations in the text should be by last name(s) of author (s) and date (for joint authorship of three or more names, the words *'et al'* should be inserted after the first name); references should be spelt out and listed in alphabetical order at the end of the paper (after the endnote listings). For more details of style, please refer to a recent issue of the OPEC Energy Review.

Submissions should be made to: Executive Editor, OPEC Energy Review, OPEC Secretariat, Helferstorferstrasse 17, 1010 Vienna, Austria (tel: +43 1 211 12-0; e-mail: prid@opec.org).

OPEC Energy Review
Chairman, Editorial Board: Dr Omar S Abdul-Hamid
General Academic Editor: Professor Sadek Boussena
Executive Editor: Hassan Hafidh

OPEC calls for nominations for its **Research and Journalism Awards**

OPEC has issued a call for nominations to be submitted for its two periodic industry Awards, the one for Research and the other for Journalism. The competitions honour distinguished individuals who have made outstanding contributions to the petroleum industry and oil-related issues, particularly in enhancing cooperation between oil producers and consumers.

The **OPEC Award for Research** is given to researchers who have shown dedication to research and analysis of important oil related issues, contributed to improving the understanding of the key determinants that support oil market stability, and have exhibited a consistently critical, yet impartial, view on oil-related issues in public debates and discourse.

The successful candidate will also have demonstrated a high level of objectivity, integrity and innovative thinking throughout his/her career and furthered knowledge in the oil industry by encouraging and promoting young researchers within OPEC Member Countries and the developing world.

The winner of the OPEC Award for Research will receive a commemorative plaque and €27,000 in prize money.

The **OPEC Award for Journalism**, which is open to both print and broadcast journalists, is given to an experienced journalist or media organization that has delivered objective and balanced reporting/analysis of the oil market and related issues for more than ten years.

The OPEC Award for Journalism also consists of a plaque and a certificate. In addition, OPEC will make a donation of €6,000 on behalf of the winner to an institution or charity of his/her choice.

Both Awards will be presented by the President of the OPEC Conference on the occasion of the 6th OPEC International Seminar, scheduled to take place at the Hofburg Palace in Vienna, Austria, on June 3–4, 2015.

The selection process for the Awards is entrusted to two panels of experts, whose knowledge and experience enable them to make an insightful judgment on the achievements of potential winners in both fields.

OPEC established the two Awards to acknowledge and celebrate the past efforts of researchers and journalists working in the oil industry, and to encourage future research endeavours and objective reporting.

Previous awards

The OPEC Award for Research was first made in 2004 at the 2nd OPEC International Seminar, which was held in Vienna, in the September of that year.

It went to Professor Robert Mabro, Emeritus Fellow of St Anthony's College, Oxford University, and a Fellow of St Catherine's College, Oxford.

Mabro, a former Director of the Oxford Institute for Energy Studies, became Honorary President of the Institute in 2006.

In 2007, together with John Mitchell and Dr Daniel Yergin, he received the King Abdallah Award for distinguished research on energy. The awards were presented during the Third OPEC Summit of Heads of State and Government, held in the Saudi Arabian capital, Riyadh, in November of that year.

The second OPEC Award for Research, made at the 3rd OPEC International Seminar in Vienna, in September

2006, was given to economist, Professor Peter Odell, then Professor Emeritus of International Energy Studies at Erasmus University, Rotterdam.

Odell, who was described at the presentation ceremony as a "gift to academia" and a legend in the global energy sector, has devoted his whole life to research in petroleum economics. In 1991, he was honoured by the International Association of Energy Economics for his "outstanding contributions to the subject and its literature."

The third winner of the OPEC Award for Research and honoured at the 4th OPEC International Seminar, in Vienna, in March 2009, was Professor Paul Stevens, Emeritus Professor at the Centre for Energy, Petroleum and Mineral Law and Policy of the University of Dundee.

Stevens has also enjoyed a long and illustrious career in the oil industry.

And Professor Oystein Noreng, of the BI Norwegian Business School, was the recipient of the last OPEC Award for Research. It was presented to him at the 5th OPEC Seminar, held in the Austrian capital in June 2012, in recognition of his life-long academic work in the field of energy economics and petroleum.

Meanwhile, the inaugural OPEC Award for Journalism was made at the 4th OPEC Seminar in 2009. It went to respected journalist, eminent scholar and academic, Dr Walid Khadduri, a former Executive Editor and Editor-in-Chief of the Middle East Economic Survey (MEES), who, at the time, was Economics Editor of the London-based Dar Al-Hayat news service.

And at the 5th OPEC Seminar in 2012, the OPEC Award for Journalism was handed to Bloomberg's OPEC news team.

The deadline for nominations for both the 2015 OPEC Award for Research and the OPEC Award for Journalism is June 30, 2014. Additional information about both the OPEC Award for Research and the Award for Journalism, as well as application forms and the procedure for submitting nominations, is available on the OPEC website at: www.opec.org.

Both Awards will be presented to the winners at the 6th OPEC International Seminar, to be held in Vienna in June 2015, again at the historic Hofburg Palace.

Reuters

ONE NIGERIA. GREAT PROMISE.

Happy anniversary Nigeria!

The OPEC Bulletin reflects on the birth of Nigeria 100 years ago. Looking back over the eventful century, the West African OPEC Member Country has metamorphisized from an agricultural powerhouse to one of the largest oil producers in the world. The celebration has even been marked with a special edition of the famous family board game, 'Monopoly'.

Build your empire: the mantra of the popular board game Monopoly is a reality for emerging Nigerian millionaires whose wealth is expected to climb from $90 billion today to $123bn by 2018.

Flush with cash from the petroleum, telecoms, aviation, banking, and manufacturing sectors, these incredible statistics show just how Nigeria has changed beyond all recognition from the agricultural production days of 1914, when it was first created by the British Empire.

Over the past 100 years, Nigeria has oscillated a confusing mosaic of being a colony to gaining independence, quashing a civil war, to rising military dictatorship and tentatively stepping into democratic leadership. And still the nation stands.

It is no wonder that Bestman Games, which produces customized versions of Monopoly in Africa, unveiled the first West African commemorative country edition of the game in April to mark Nigeria's centenary.

This version showcases some of the nation's most famous heritage sites — from Olumo rock in Abeokuta to the Wikki Warm Spring in Yankari National Park.

In its "Opportunity" and "Chance" cards, players are educated about Nigeria's environmental laws, personal financial literacy, travel and tourism. Also included is a special playing token in the form of a football boot to acknowledge the country's love for football and national teams — the Eagles, the Falcons and the Flamingoes.

Nimi Akinkugbe, Chief Executive Officer of Bestman Games, said: "This special Nigeria centenary edition speaks eloquently and visually to our diversity and uniqueness as a nation as it illuminates the numerous and precious heritage sites and iconic locations across our vast country."

Joining the colonies and protectorates of Northern and Southern Nigeria, the British Empire created modern Nigeria on January 1, 1914. It was a controversial move considering the diversity of languages, ethnicities, communities, cultures, traditions and aspirations.

Today, there are over 300 languages in Nigeria — although the dominant ones are English, Yoruba, Igbo and Hausa. Fifty-two years ago, the country acquired its independence from the United Kingdom and is now a federal constitutional republic, comprising 36 states.

"We are blessed with a vibrant population and our democracy is maturing. This centenary celebration presents us with an opportunity to count our blessings as a nation, celebrate our dexterity and resilience as a people and resolve to launch into the next century with renewed determination, hope and expectations," said Senator Anyim Pius Anyim, Secretary to the Government of the Federation.

The centenary offers another chance for the government to reinforce the vision of becoming one of the world's top 20 economies by 2020 by diversifying the domestic economy, especially through agriculture, and improving the health and development of its citizens.

Being one of the largest oil producers in Africa means Nigeria's regional clout is undisputed. Despite its abundance of natural resources and a vibrant population that stands at 168 million, Nigeria's journey has been fraught with many challenges, acknowledged President Goodluck Jonathan, and it is still struggling to reach its full great potential.

"No one should insist on reversing history; those who seek a return to pre-1914 Nigeria only seek to diminish our collective heritage. We must remain the forward-looking people that we are," he said.

Sharing the African perspective by Africans, the four-day celebration in February saw the President welcome more than 20 world leaders, including South Africa's Deputy President, Kgalema Motlanthe, and French

Left page: Dancers perform during a live concert and fireworks display for Nigeria's centenary celebration at the national stadium in Abuja in February.

L-r: Bez Singer; Edem Duke, Nigeria's Minister of Tourism, Culture and National Orientation; Nimi Akinkugbe, CEO and Chairperson, Bestman Games; Odein Ajumogobia; and Dayo Adedayo.

Celebrations all around ... Nigeria has also just become the largest economy on the African continent.

President, Francois Hollande, who offered goodwill messages to Nigeria.

A charity ball dinner, headed by former military ruler, General Yakubu Gowon, raised funds for charity at the Eko Convention Centre; 100 outstanding Nigerians over the nation's history were recognized.

Other events included prayer sessions by the Christian and Muslim faith groups, a concert, a multimedia show and fireworks, and military parades.

Centenary city

Abuja, the political capital of Nigeria, will host Centenary City, a legacy project to mark the nation's transformation to a world class urban development using foreign direct investment (FDI) of an estimated three trillion naira.

The ground-breaking ceremony occurred in March. "A magnificent and awe-inspiring architectural masterpiece will eloquently introduce Centenary City and welcome visitors to Abuja," said the government in a statement.

As a business, leisure and tourism destination, the aim is that over 500,000 visitors will come daily to the shopping malls, health farms, sports facilities, theatres and cinemas, while 150,000 people will reside in high-rise apartments and family homes. Nigeria's history will be preserved in archives and the plans reveal an alternative operational base for the President.

"The idea is to get a better city than the present Abuja where people will not need to provide basic amenities by themselves," explained President Jonathan.

Imitating Dubai, Monaco and Singapore, the city will be constructed over ten years. Designated as a "duty free zone" and "tax shelter" with special banking regulations, government agencies, investors and other interested partiess are expected to utilize it.

With sustainable environmental principles and biomimicry at the core, Centenary City will be distinguished from other Nigeria infrastructure projects through zero waste management because recycling and repurposing of waste are an integral part of the ecosystem.

Green spaces will protect the city and pedestrians, cyclists, drivers, trams and monorail can co-exist through an organic interconnection of arteries, streets and pathways.

Electricity will be readily available through a gas-fired 500 megawatt power plant connected directly to a gas terminal, unlike other cities in Nigeria. Cultural symbols, symbolizing unity and strength, will decorate public areas.

Petroleum sector outlook

Looking back over 100 years, the discovery of oil in 1956 in Oloibiri, Bayelsa state catapulted the country onto the international stage. It transposed agricultural products as the backbone of the national economy and has been the main driver for the last six decades.

Nigeria became an OPEC member in 1971, giving it the confidence to negotiate with operators, who, at the time, were controlling stakes in their projects, according to Alhaji Shettima Ali Monguno, the first Nigerian Petroleum Minister in OPEC.

As one of the world's largest oil producers, Nigeria's influence cannot be underestimated: an average of 2.2m barrels/day of oil were delivered in 2013. Nevertheless, around 300,000 b/d of oil was lost due to damaged oil export pipelines and domestic crude oil and petroleum product pipelines last year.

Some of this behaviour can be explained by the fact that although the oil industry accounts for almost 80 percent of the government's revenue, too many Nigerians on the ground are yet to reap the full benefits with adequate infrastructure and state services, such as high levels of education, transport and housing.

President Jonathan has pledged his commitment to uprooting corruption: "The green passport should be a symbol of honour, respect and dignity, not humiliation," he said in March whilst touring Namibia.

Reform of the petroleum sector under the Petroleum Industry Bill (PIB), which is currently being debated by the National Assembly, aims to ensure the country remains competitive internationally, streamlines procedures and agencies, enhances transparency and offers ample economic opportunities to indigenous companies and citizens so that equipment and services are provided internally, rather than externally.

Efforts are also underway to diversify into natural gas development so that domestic gas consumption increases three fold from 1.7bn cubic feet/day today to 5.4bn cu ft/d by 2019 to underpin power supplies and unlock the manufacturing and petrochemical industries, said Andrew Yakubu, Head of Nigeria's National Petroleum Corporation (NNPC).

Promoting the participation of local operators to boost production is the primary aim of Nigeria's second marginal fields licensing round, which offered 31 fields and closed in January 2014.

Beyond petroleum

Outside of oil, what does Nigeria's future hold? This year is turning out to be quite a pivotal point. Aside from the centenary, the government announced in April that it had rebased its gross domestic product (GDP) data, which revealed it has the continent's biggest economy — pushing South Africa into second place *(see page 46)*.

In 2013, Nigeria's GDP was N80.3 trillion ($509.9bn), whereas South Africa reported a figure of $370.3bn, the Nigerian statistics office said. Nigeria's GDP increased because previously uncounted industries like telecoms, information technology, music, online sales, airlines and film production were now included.

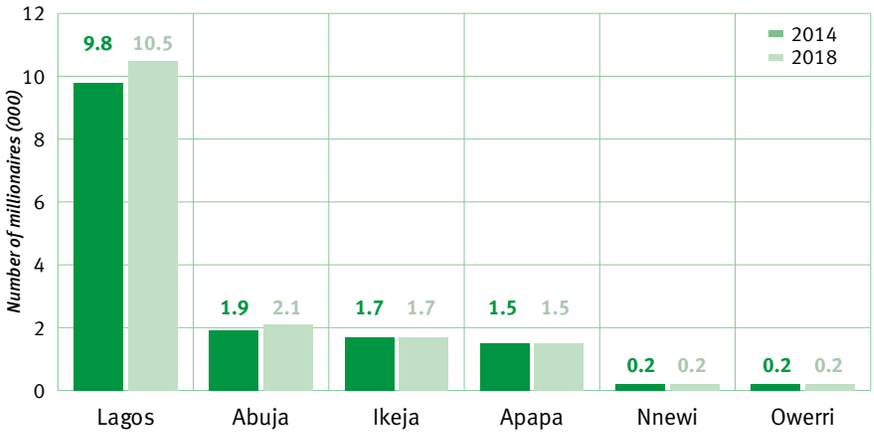
As the most populous country in Africa, Nigeria's economic success is a barometer of external opinions about the continent's fortunes. Investors are excited about Nigeria's growth potential in these sectors where in a little over ten years, over 100 million active cell phone lines have been activated and it has cultivated the largest internet traffic in Africa.

Economists are keenly watching the MINT bloc, comprising Mexico, Indonesia, Nigeria and Turkey, as emerging economic giants over the medium term.

Nigeria's young population, commodity stronghold and geographic location, with the potential to become a gravitational point in Africa's economy, characterize it as a powerhouse.

Nigeria's prosperous luxury market

Millionaire population by city



Source: WealthInsight.

Centenary calendar

Conferences, exhibitions and festivals are taking place worldwide to mark Nigeria's centenary:

April ..... Top Nigerian poets will share what 100 years of amalgamation means to them in *Poems for a Century: An Anthology on Nigeria,* published by Amalion.

June ..... Organisers of the Nigerian Centenary Awards UK will acknowledge the most outstanding 100 diasporans in the UK over the last century who will be honoured at a special gala dinner in London on June 27.

July ..... A six-day exhibition of Nigerian arts and culture, lectures, and a sumptuous awards dinner will take place in New York.

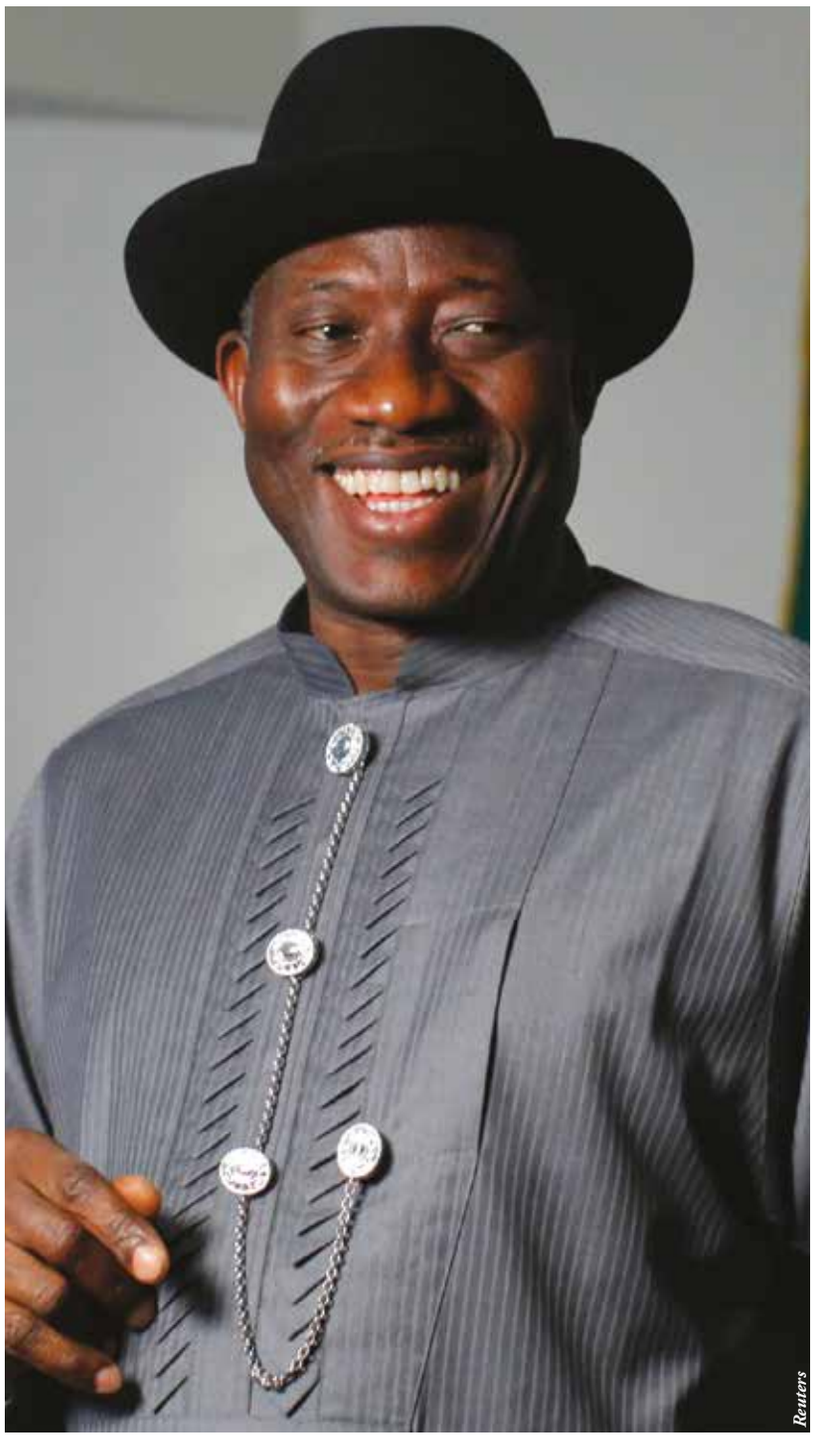
Already, 2014 could be the year that the number of MINT millionaires surpasses those from the BRICSs (Brazil, Russia, India, China), suggests research by *SPEAR's* magazine and *WealthInsight*, a London based consultancy.

Oliver Williams, an analyst at WealthInsight, said Nigeria has been identified as the next hotspot for the luxury market.

"Nigeria already has Africa's largest private jet market, champagne consumption and one of its biggest art markets. Nigerian millionaires have also been keen buyers of luxury goods in London and other European capitals, so it will only be a matter of time before luxury retailers start opening outlets in Lagos or Abuja," he affirmed.

That says it all.

President Jonathan calls for united front to make Nigeria even greater


Reuters

President Goodluck Jonathan *(pictured left),* in his centenary address to the nation, urged the people of Nigeria to continue to work together as one, united people, to make the West African country even greater. In describing the amalgamation of the separate Protectorates of Southern Nigeria and Northern Nigeria in 1914 that signaled the birth of Nigeria as a blessing, he stated that his administration remained fully committed to the progressive development of the country and the consolidation of peace, unity and democratic governance.

"Nigeria remains a truly blessed country — a country of gifted men and women who continue to distinguish themselves in all spheres of life, a country whose diversity remains a source of strength," President Goodluck Jonathan said in his detailed speech.

"We pay tribute today, as always to our founding fathers and mothers, and all the heroes and heroines whose toil and sweat over the century made this country what it is today," he said in marking the centenary.

"For us therefore, today is not just the beginning of a new year, but the end of a century of national existence and the beginning of another. It is a moment for sober reflection and for pride in all that is great about Nigeria," he added.

Looking at the country today, 100 years on, Jonathan said that despite several continuing domestic and global challenges, 2013 witnessed many positive developments for Nigeria "which we will strive to build upon in 2014."

National transformation

He maintained that the administration had "diligently carried forward the purposeful and focused implementation of our agenda for national transformation in priority areas such as power, the rehabilitation and expansion of national infrastructure, agricultural development, education and employment generation."

The President recalled that the 2013 budget carried the theme 'Fiscal consolidation with inclusive growth', at which time he had emphasized the need for people to remain prudent with the country's fiscal resources and also ensure that the Nigerian economy kept growing and creating jobs.

"I am pleased to report that we have stayed focused on this goal. Our national budget for 2014 is specifically targeted at job creation and inclusive growth. We are keenly aware that in spite of the estimated 1.6 million new jobs created across the country in the past 12 months as a result of our actions and policies, more jobs are still needed to support our growing population.

"Our economic priorities will be stability and equitable growth, building on the diverse sectors of our economy."

Jonathan noted that last year saw the implementation of the National Industrial Revolution Plan (NIRP) aimed at industrializing Nigeria and diversifying the economy into sectors such as agro-processing, light manufacturing, and petrochemicals. And, as a result of its backward integration policies, Nigeria had moved from a country that produced two million tonnes of cement in 2002, to a country that now had an output capacity of 28.5m t.

Net exporter of cement

"For the first time in our history, we have moved from being a net importer of cement to a net exporter. Foreign direct investment into Nigeria has also been strong. In fact, for the second year running, the United Nations Conference on Trade and Development (UNCTAD) has named Nigeria as the number one destination for investments in Africa," he affirmed.

The Nigerian President said the country was witnessing a revolution in the agricultural sector and the results were evident.

"Last year, we produced over 8m t of additional food and, this year, inflation fell to its lowest level since 2008, partly due to higher domestic food production. Our food import bill has also been reduced from 1.1 trillion naira in 2011, to 648 billion naira in 2012, placing Nigeria firmly on the path to food self-sufficiency.

The sector, he continued, was also supporting more jobs. "Last year, we produced 1.1m t of dry season rice across ten Northern states and over 250,000 farmers and youths in these states are now profitably engaged in farming, even during the dry season."

Jonathan said the administration was also developing the nation's water resources which were key to both domestic food production and job creation goals.

In 2013, the construction of nine dams was completed, which increased the volume of the country's water reservoirs by 422m cubic metres.

"Through our irrigation and drainage programme, we have increased the total irrigated area by over 31,000 hectares, creating jobs for over 75,000 farming families, while increasing production of over 400,000 t of assorted irrigated food products."

"We pay tribute today, as always to our founding fathers and mothers, and all the heroes and heroines whose toil and sweat over the century made this country what it is today."

Invest in education

The Nigerian President professed that the single greatest thing they could do to ensure all Nigerians realized their potential and played a full part in the nation's future, was to invest in education.

"The education of our young people is a key priority for this government. We take this responsibility very seriously and I urge all other stakeholders in the sector to recognize the national importance of their work and to help advance the cause of education in our nation."

Jonathan disclosed that between 2007 and 2013, the administration had almost tripled the allocation for education — from 224bn to 634bn naira — and "we will continue to vigorously support the sector. We have improved access to education in the country with the construction of 125 Almajiri schools, and the establishment of three additional Federal Universities in the North, bringing to 12, the number of universities established by this administration."

He continued: "We are committed to making our tertiary institutions true centres of learning for our young

people. We will therefore focus on upgrading hostels, laboratories, classrooms and halls.

"As the 2015 deadline for the Millennium Development Goals (MDGs) approaches, we will continue to expand access to basic education for all Nigerian children. Working with State governments, we shall decisively tackle the problem of the large numbers of out-of-school children in this country.

"We will also invest in technical and vocational education to promote skills development for our youth across the country."

In the health sector, said the President, strong safety nets were being built, while access to primary health care under the *'Saving One Million Lives'* programme was being improved.

"In this our Centenary year, we will continue our efforts, through the *'Saving One Million Lives'* initiative to strengthen primary health care services. We will scale up interventions in reproductive, maternal, newborn and child health, nutrition, routine immunization, HIV/AIDS, malaria elimination, tuberculosis, neglected tropical diseases, and non-communicable diseases.

"We will pay greater attention to the provision of universal health coverage. Besides the implementation of new initiatives such as my comprehensive response plan for HIV/AIDS, we shall continue to collaborate with global health partners to deliver our health sector transformation agenda."

"We are determined to sustain our strong macroeconomic fundamentals, to strengthen our domestic institutions, and to invest in priority sectors. These investments will create more jobs for our youth."

Jonathan pointed out that national immunization coverage had exceeded 80 per cent, while, for the first time in the history of the country, there had not been any transmission of the type-3 wild polio virus for more than one year.

Upgraded medical facilities

"We have also eradicated the guinea worm that previously affected the lives of over 800,000 Nigerians yearly. In tertiary health care, we upgraded medical facilities across the country.

"Two of our teaching hospitals — the University of Nigeria Teaching Hospital in Enugu, and the University College Hospital in Ibadan — commenced open heart surgeries this year after the installation of new facilities," he informed.

But the Nigerian President said that as Nigeria entered its centennial year, there was still much work ahead.

"We are determined to sustain our strong macroeconomic fundamentals, to strengthen our domestic institutions, and to invest in priority sectors. These investments will create more jobs for our youth.

"The government will, at the same time, continue to scale-up investments in safety nets and the MDGs to take care of the poor and the vulnerable so that they too can share in our growth and prosperity."

Jonathan said that, in 2014, the administration would continue to prioritize investments in key sectors such as infrastructure development, power, roads, rail transportation and aviation.

"In the past year, the federal government completed the privatization of four power generation companies and ten power distribution companies. We are also in the process of privatizing ten power plants under the National Integrated Power Projects (NIPP) scheme.

Transmission network boosted

"We shall also boost investments in transmission to ensure power generated is properly evacuated and distributed. In this regard, we have already mobilized an additional $1.5bn for the upgrade of the transmission network in 2014 and beyond."

The government would also strengthen regulation of the sector and closely monitor electricity delivery to increase this beyond 18 hours/day.

"We will complete the privatization of the NIPP projects, accelerate work on our gas pipeline infrastructure and also continue to invest in hydro-electric power and clean energy as we monitor the effects of climate change on our economy," he stated.

The Nigerian President said his administration believed that the cost of governance in the country was still too high and must be further reduced.

It intended completing the deployment of the three electronic platforms in 2014 — the Treasury Single Account (TSA), the Government Integrated Financial Management Information System (GIFMIS), and the Integrated Payroll and Personnel Information System (IPPIS).

"These are all geared towards improving efficiency and transparency in our public finances. Through these reforms, we have already saved about 126bn naira in leaked funds and we intend to save more."

Jonathan revealed that to sustain Nigeria's ongoing agricultural transformation, the administration had planned further investments in the sector.

The recently launched Youth Employment in Agriculture Programme (YEAP), called the Nagropreneur Programme, would encourage the nation's youth to go into commercial agriculture as entrepreneurs.

Improved agricultural financing

"We will establish new agro-industrial clusters to complement the staple crop processing zones being developed across the country. In 2014, the administration will continue to work with the private sector to improve financing in the agricultural sector. For example, we will launch the Fund for Agricultural Finance in Nigeria (FAFIN), which will serve as a private equity fund to invest in agri-businesses across the country."

The Nigerian President said the country's small and medium-scale enterprises (SMEs) would be the bedrock of Nigeria's industrialization.

"We have about 17m registered SMEs and they employ over 32m Nigerians. When our SMEs grow, more jobs will be created for our youth. Therefore, in 2014, the administration will focus strongly on implementing the Nigeria Enterprise Development Programme (NEDEP) to address the needs of small businesses.

"Our interventions will include helping SMEs with access to affordable finance, business development services, and youth training. In addition, our new CET policies will enable us to support our emerging industries. We will also intensify our investment promotion efforts abroad, to ensure we bring the biggest and best companies from around the world to invest in Nigeria," he asserted.

The country, continued Jonathan, was also reinvigorating its housing and construction sector and had established the Nigeria Mortgage Refinance Company (NMRC), which would increase liquidity in the housing sector, provide a secondary market for mortgages, and thereby increase the number of people able to purchase or build homes at an affordable price in the country.

"In 2014, we will work in a number of pilot states where the State Governors have agreed to provide fast-track land titles, foreclosure arrangements, and serviced plots. This new institution will enable us to create over 200,000 mortgages over the next five years at affordable interest rates.

"In addition, those at the lower end of the economic ladder will not be left behind as this new initiative will expand mass housing schemes through a re-structured Federal Mortgage Bank and other institutions to provide rent-to-own and lease-to-own options.

"I am confident that, very soon, many more hardworking Nigerian families will be able to realize their dream of owning a home," affirmed the President.

In the banking sector, he said, Nigerian entrepreneurs still lacked access to affordable financing, with medium-to-long-term tenors. To address this gap, a new wholesale development finance institution would be established in 2014 to provide medium-to-long-term financing for domestic businesses.

"We are working with partners such as the World Bank, the Africa Development Bank, the BNDES Bank in Brazil, and KfW in Germany, to realize this project. Our existing Bank of Agriculture and Bank of Industry will be re-structured as specialized institutions to retail financing from this new wholesale development bank."

Jonathan stressed that as peace and security remained prerequisite conditions for the full realization of the administration's objectives, "we will also do more in 2014 to further empower our security agencies who are working in collaborative partnerships with our friends in the international community to stem the scourge of terrorism in our country and enhance the security of lives and property in all parts of Nigeria."

"I urge all Nigerians, no matter their stations in life, to rededicate themselves to contributing meaningfully to further enrich our national heritage. The time for that re-dedication is now, not tomorrow."

He concluded: "The task of making our dear nation a much better place for present and future generations cannot be left to the government alone. I therefore urge you all to be ready and willing to do more this year to support the implementation of the Federal Government's Agenda for National Transformation in every possible way.

"Let us all, therefore, resolve as we celebrate Nigeria's centenary to place the higher interests of national unity, peace, stability and progress above all other considerations and work harder in our particular fields of human endeavour to contribute more significantly to the attainment of our collective aspirations.

"I urge all Nigerians, no matter their stations in life, to rededicate themselves to contributing meaningfully to further enrich our national heritage. The time for that re-dedication is now, not tomorrow," he added.

Centenary celebrating Nigeria now largest economy in Africa

Two thousand and fourteen is becoming somewhat of a landmark year for Nigeria. Not only is it celebrating the centenary of its birth, after being founded by the British Empire in 1914 *(see story on page 38),* it has just overtaken South Africa as the largest economy on the African continent.

According to data issued by Nigeria's Bureau of Statistics, a long-overdue recalculation of the country's gross domestic product (GDP) had resulted in the previous value almost doubling.

In 2013, the OPEC Member Country's GDP was calculated at 80.3 trillion naira, or $509.9 billion, up from the 42.3tr naira estimated before the rebasing.

This, said the Bureau, compared with South Africa's 2013 GDP of $370.3bn.

Yemi Kale, Statistician General at the Bureau, told reporters in Abuja that the new GDP figure had also greatly reduced Nigeria's debt-to-GDP ratio to 11 per cent for last year, compared with 19 per cent in 2012.

He noted that Nigeria had not carried out a rebasing of its GDP since 1990, which meant that such high growth areas as e-commerce, mobile phones, airlines and the country's fast-developing film industry 'Nollywood' needed to be taken into account to get a truer value. The film industry alone was said to be worth 1.4 per cent of GDP.

Kale said Nigeria's annual GDP growth for 2013 was expected to amount to 7.41 per cent after the rebasing, compared with about 6.5 per cent in 2012.

The official pointed out that the rebasing exercise would now be conducted every five years. This was deemed essential as foreign investment was increasing with each passing year and businessmen needed to know accurate information about the country's potential worth.

He disclosed that the new calculation meant that Nigeria, Africa's most populous country with 168 million people, had advanced up the GDP table of global nations — rising from 33rd position to 26th.

The new GDP figure puts Nigeria ahead on the list of countries like Austria ($394.7bn), Venezuela ($381.26bn), Columbia ($369.6bn), Thailand ($365.96bn), Denmark ($314.88bn), Malaysia ($274.7bn) and Singapore ($269.86bn).

Kale asserted that the new GDP breakdown revealed better diversification of the Nigerian economy than earlier reported.

He said that even though agriculture was growing in terms of total value and jobs created, the rise in the contribution of the services sector, such as telecommunications, had led to the reduction of its contribution as a proportion of total GDP.

The implication of this, he continued, was that Nigeria was moving towards a more service-oriented economy. And this boded well for future investment.

Nigerian Finance Minister, Ngozi Okonjo-Iweala, was quoted by *Reuters* as saying that billions of dollars of foreign and domestic investment were envisaged for 2014, including $1.5bn in agriculture alone.

However, although Nigeria's GDP per capita surged to $2,688 last year from an estimated $1,437 in 2012, poverty and inequality in the nation has widened.

"We need to work hard on infrastructure, governance, corruption and building a social safety net," the Minister said, in noting that inequality had been rising.

As for South Africa, it has welcomed the announcement that Nigeria is now the biggest economy on the continent.

The South African National Treasury said: "The announcement resonates with South Africa's consistent message since 1994 that we want to see more African economies grow and live up to their potential, just as we continue striving to do so with our own economy," the Treasury was quoted as saying in a statement.

It added: "The announcement gives concrete expression to the fact that Africa is indeed rising."

The Treasury pointed out that South Africa always stood to benefit from improved economic growth on the rest of the African continent.

It noted that South African companies played a big part in the excpansion and development of Nigeria's wholesale and retail and telecommunications sectors, the two largest components of the services sector.

"This is a positive story of African countries contributing to reshaping each other's economies through increased investment. South Africa will continue to nurture mutually beneficial trade and investment ties with Nigeria and other African countries," the Treasury commented.

Venezuelan institute a benchmark for the communication of science and environmental caring

Paint. We love it. On our cars, in our homes … even on our nails. A planet without paint would be a very dull planet indeed. But the environmentally friendly colours that adorn our walls and buildings today are very different to the toxic and harmful substances that helped at once brighten and darken our lives in the not so distant past. And that is thanks to the dedication of ground-breaking scientists and establishments like the Venezuelan Institute for Scientific Research (IVIC). It is because of their work and the application of modern technological processes that inhaling and enjoying the aroma of freshly applied paint today poses much less of a threat to one's health. The *OPEC Bulletin*'s Venezuelan correspondent, **Saúl Castro Gómez**, takes a look at the work of this renowned institute and some of its scientific geniuses, who, through entrepreneurship and innovation, have pioneered and persevered to help overcome life-threatening conditions and make the environment a safer place to live in.

Founders and striking visionaries

At his home, probably a packed desktop — littered with official documents and research papers on how to promote the peaceful use of nuclear energy — foreshadows the role that Marcel Roche Dugand will play later in the name of science.

It is the year 1958 and William Sterling Cole is 12 months into his directorship of the newly created International Atomic Energy Agency (IAEA). Among Sterling's duties is an important one — to communicate the activities of the fledgling organization to the Agency's Board of Governors, offering his expert advice so that its mission can be successfully carried out.

The board consists of some of the most outstanding scientists of the time and the chairperson is Dr Roche Dugand, a Venezuelan from Caracas, who is an MD with a specialization in endocrinology and other knowledge of nuclear medicine. While being occupied in Venezuela with what will be one of his greatest interests — the public understanding of science (PUS or PAwS) — the physician still possesses the energy and determination to work with other institutions of a global standing.

Obviously, helping to set the guidelines of an organization as important as the IAEA, mandated to govern the secure and peaceful use of nuclear energy and its associated technology, was of foremost proportions. To date, the IAEA's mission continues to unfold as an important undertaking within the Millennium Development Goals for attaining environmental, economic and social development.

Roche Dugand lived in interesting times. The late 1950s were years of special social effervescence. Two major ideological views helped shape geopolitics internationally, while evolving technology allowed humans the possibility to think that seemingly infinite outer space was indeed reachable. In 1958, the National Aeronautics and Space Administration (NASA) was founded — and important meetings were held in the petroleum sector, leading to OPEC's formation in 1960.

Overall, the Billboard's number-one single of 1958, written by Franco Migliacci, and interpreted by Domenico Modugno — 'Volare' — was not so far removed from the entrepreneurial scientific spirit of the epoch. The lyrics: "Poi d'improvviso venivo dal vento rapito, e incominciavo a volare nel cielo infinito." Translated: "Then I was suddenly swept up by the wind and started to fly in the infinite sky."

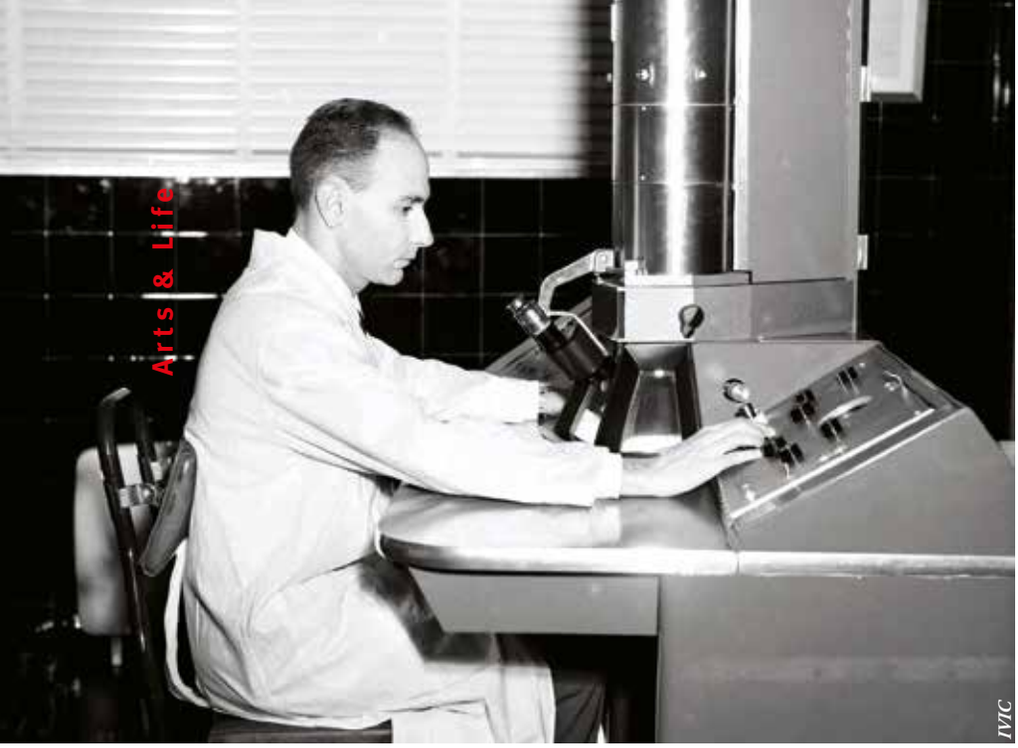
In the context of these global changes, Roche Dugand had already accumulated vast academic experience that stretched back from his time as a young researcher at the New York Institute of Public Health up to his more comprehensive work for the World Health Organization (WHO), where he drew up guidelines for the treatment of ancylostomiasis, hormone imbalances and diabetes.

In 1958, political changes in Venezuela furthered the restructuring of different organizations and, one year later, he was favoured for an appointment that would prove to be the most significant of his career — as Director of the newly formed Venezuelan Institute for Scientific Research, better known as IVIC. Roche Dugand remained as governor in the IAEA until 1960, before leaving to fully devote his time and expertise to consolidating the new institute's research and helping it grow into a world-class scientific organization.

In reality, IVIC was preceded by the Venezuelan Institute of Neurology and Brain Research (IVNIC), which in 1954 initiated academic activities guided by the initiative of another physician of extraordinary character and arguably one of the most influential scientists of the 20th century. His curricular life reads like a science-fiction script, but of course there was nothing fictional about Dr Humberto Fernández Morán.

A native of Maracaibo, Venezuela — a city traditionally linked to the petroleum sector — Fernández Morán divided his medical studies between Venezuela and Germany, graduating with honours at the University of

Dr Marcel Roche, first director of the Venezuelan Institute for Scientific Research (IVIC).



Dr Humberto Fernández Morán pictured during the time of the Venezuelan Institute of Neurology and Brain Research (IVNIC).

Munich in the early 1940s. As a foreigner, this was particularly significant considering the convulsed Germany of those times. He then devoted part of his career to the always-challenging art of teaching in universities, such as the University of Chicago, Harvard University, and Stockholm University. And NASA counted on the expertise of the Venezuelan for one of its panels of key scientists that was working on the Apollo missions. Specifically, this involved studying lunar soil samples and determining their connection to Earth's early history.

But probably what Fernández Morán was more celebrated for internationally has more to do with, pardon the pun 'cutting edge' technology — the introduction of the 'diamond' scalpel. He also brought about the improvement of ultramicrotomy into something he denominated 'cryo ultramicrotomy', which revolutionized scientific observation methods with the microscope and the field of medicine in connection with eye surgery and ophthalmology.

With the increased use of ultramicrotomy — a technique designed for cutting sampling into amazingly thin portions for analysis utilizing the transmission electron microscope (TEM) — the creation of a tool with better 'precision' than soft metal scalpels, became a necessity. In this regard, Fernández Morán introduced his diamond scalpel. Patented in 1955, this unique bistoury, with its ground-breaking design specifications, was free of defects and offered a truly accurate view of samples exposed to lens magnification.

Apart from enhancing probes used for observing specimens, either living matter, such as human tissue, or plants, or inert material like metals, rock and crude oil derivatives, such as plastic, the diamond scalpel proved especially useful in eye surgery, particularly of a refractive nature, laying the possibility alongside the microscope to implement surgical procedures, such as mini asymmetric radial keratotomy to correct astigmatism, or radial keratotomy to correct myopia.

In 1947, while visiting Sweden, the young neurosurgeon Fernández Morán was offered a proposal to work in the laboratory of the Swedish scientist and Nobel Prize winner in Physics (1924), Manne Siegbahn. It is believed that this contact ignited his interest in the field of microscopy, which he managed to master years later.

And unbeknown to him, the events in Sweden would have a direct bearing on the formation of IVIC, following his experiences at the country's Karolinska Institute and Serafiner Hospital. Working together with the notable Swedish neurosurgeon, Axel Herbert Olivecrona, and affected by the deaths caused by malignant tumours, the visionary of Maracaibo found himself oriented towards researching to learn more about the organization of tumour cells. With this premise, IVNIC, today IVIC, was born in 1954.

For his contribution to the field of medicine, Fernández Morán was awarded the John Scott Legacy Medal. And for his devotion to duty, science, and "new and beneficial institutions," came the 'Order of the Polar Star,' one of the highest recognitions given to any individual by the Constitutional Monarchy of Sweden.

It has been said that, at some point, while he lived and worked in the United States, Fernández Morán was nominated for a Nobel Prize. However, due to various logistical and political reasons, he refused to accept the nomination. One of the conditions of acceptance would have meant unseating his Venezuelan nationality for a North American passport.

Of interest, this patriotism, which every now and then characterizes individuals of a strong breed, was finally swayed by a Swedish woman. The Venezuelan ended up married and based in Stockholm with two daughters. In 1999, Fernández Morán passed away and, as per his request, his ashes were spread out somewhere over Sweden's Lake Mälaren.

As for Roche Dugand, his ashes were scattered in the gardens of IVIC. This was his last request before dying at his home in Florida in 2003. For ten years, he worked as IVIC's Director. Later, he served as President of the Council of the United Nations University, based in Tokyo. His communication skills in the public understanding of science

certainly had a positive effect among fellow researchers around the globe.

Evidently, establishing an institution like IVIC required a joint effort. Many Venezuelan scientists, medical experts, academics, and associated workers participated in its creation. Of note, the inspirational talent and resources were available to a country that, in the 1950s, according to *Time* magazine, experienced major economic growth among nations.

The Institution and some insights on the public understanding of science

Located 1,700 meters above sea level, IVIC occupies a ground area of approximately 810 hectares (2,000 acres). The terrain it stands on is something more than just randomly selected land, as a consequence of careful planning and the country's urbanization.

In conjunction with the Venezuelan government, Fernández Morán chose a location with 'microclimate' characteristics — that is to say ideal for growing crops with various flora and offering the type of temperature and acoustics that was said to be good for optimal brain performance and thus learning. And so the sector known as Altos de Pipe, situated just a few kilometres from the country's capital, became the home of the new IVIC building, providing all the necessary conditions for any aspiring 'city of science'.

A nuclear reactor class RV-1, or Research Reactor (RR), from General Electric, was installed at the facility. In Venezuela, the RV-1 was used to perform research in radiochemistry, nuclear and solid-state physics and as a neutron source for the IVIC scientific community. It functioned until 1991, reaching a capacity of three million watts of thermal power, before being shut down. As one of the world's largest petroleum exporters and with important hydroelectric resources, the need for nuclear power to cope with Venezuela's domestic energy needs was not really required. This idea was reinforced even more following the unfortunate incidents of Fukushima in 2011.

At its dawn, with education and applied research in neurology and interrelated disciplines such as neuroradiology, neurosurgery, neuropsychology and neurophysiology, among others, IVIC aspired to be the continent's leading reference in the structural understanding of the nervous system and in the medical treatment of mental diseases. However, with the reorganization masterminded by Roche Dugand, other areas of investigation were established. Apart from advanced research in medicine, physics, mathematics and biology, the so-called 'central science' — chemistry — began to be taught at postgraduate level.

The importance of this academic opening to other different areas of knowledge lay in the application of a concept that would prove to be vital over the ensuring years in graduate studies at universities worldwide and even in educational organizations at an elementary level, such as the International Baccalaureate (IB). This was the use of the 'multidisciplinary approach'.

IVIC was one of the first educational institutions that emphasized the use of multiple disciplines as areas of interaction to understand and solve problems. This was an approach that was understood to be holistic and therefore more beneficial to society than 'reductionism', another line of philosophical thinking in science.

This opening also accommodated the increasing demand for students interested in postgraduate studies, not only in Venezuela, but also in the Latin American region as a whole. With this process, Roche Dugand brought into the arena some fundamental concepts, in combination with multidisciplinary research — the diffusion or public understanding of science, and 'environmental awareness'.

Within this academic framework, it became central for IVIC researchers to be questioned by themselves in the pursuit of their goals. Such questions as: To what extent is an invention or scientific result truly useful? Does it favour society and nature as a whole, or just a group of people? What is the level of joy experienced among scholars when a project is completed? Is it possible for people to understand just how humanity has benefited from scientific results? What is the value of investment (for sustainable well-being)?

The public understanding of science has, as its primary function, the dissemination of clear information as to how scientific advancements can benefit humankind and Earth. Thus, support from different social actors and their participation is more likely to happen. And secondly, it seeks to bring about public opinion that is informed and able to 'offer well-argued opinions' on topics of global concern.

According to Susan Fiske, an experienced professor on Public Affairs and Psychology at Princeton University, individuals are 'cognitive misers', "meaning that they rely on information shortcuts when making judgments about complex issues, rather than carefully evaluating the full range of information at their disposal." In this

sense, scientists are entitled to translate to common folk the scientific phenomena because these individuals do not have the opportunity to experience it for themselves directly. For this purpose, mass media, journalists and editors play a consequential part, besides scholars.

There have been topics of universal connotations that still have neither satisfactory approval, nor a complete understanding among the masses. Darwin's theory of evolution, the Moon landing, and more recently, global warming, are just a few examples. Likewise, without proper communication, or in its absence, subjects of a scientific nature can be misconstrued or only partially understood within public opinion.

Nonetheless, stating things clearly is not an easy task. There are many economic variables to consider when trying to inform the public correctly about something, not to mention the presence of cultural and ethnic parameters (secularization/religiosity) that function differently in each geographic region.

However, the men and women of science cannot come up with the realization that this complexity would prevent them from fully acquiescing to inform about what they do. Long before contemporary entrepreneurs embraced digital media for communicating ideas, Roche Dugand and other Venezuelan pioneers promoted the public understanding of science through workshops, events, printed information, and audio-visual productions, aimed at properly informing people about the different relations that occur between scientific/technological innovations and the general public.

The chemist Saúl Castro Ordóñez as a young researcher in Venezuela. His advancement in the field of Alkyd Resins has placed Latin America at the vanguard in the formulation of eco friendly paints.

In fact, for exhibiting a talent for interpreting science to the public, Roche Dugand, in 1987, was awarded the Patnaik Kalinga Prize for the Popularization of Science. Other prize recipients from Venezuela were Aristide Bastidas in 1980 and Marisela Salvatierra in 2002.

In the words of Martin Bauer, a prominent professor of methodology at the London School of Economics and Political Science, as events to communicate knowledge require know-how to organize and resources they become the remit of private 'angels' rather than academics. These angels are the link between the dissatisfied public and the entrepreneurs or institutions of science.

As time progressed and with its humanistic aura, the academic footprint at IVIC brought with it a faculty configuration based on research centres. And apart from the incisive attention given by the institute to the departments of physics, mathematics and chemistry — *las tres Marias,* (the three Marys) — as Venezuelans refer to them colloquially, other centres emerged. These specialized in cellular biology, anthropology, biomedicine, experimental medicine, material engineering, oceanology, as well as Antarctic studies. These operate together with the Latin American Centre for Biological Sciences (CLAB) and the International Centre for Tropical Ecology (CIET), both of which were established in cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Researchers and postgraduate students have been customarily elected, based on their excellent academic records. Once at the institute, the Centre for Advance Studies (CEA) channels the academic activities of its human talent. Though the focus of the institute is on graduates, undergraduate students are also welcome to do internships, while gaining knowledge of what it means to work in the research field. In 1996, UNESCO acknowledged the IVIC library, denominated a 'student support unit' as one of the best libraries on the American continent for science and technology.

What stands out is a statement summarizing the vision of IVIC as a key player in the scientific and technological field, with projects having both a national and international impact. This premise has been endorsed extensively over the last 54 years, despite the challenges that every now and then come from global financial dynamics, which can affect the course of a research work.

At the moment, and apart from offering routine support to public and private organizations, the institute is involved in a variety of projects of significant scope. In a brief snapshot, some are worth mentioning:

- The IVIC Antarctic expeditions, in operation since 2008, are intended to study and measure the 'albedo', or reflectance of the snow in direct correlation with global warming. These expeditions that progressively have been contributing to enhancing knowledge on the dynamics involved in global warming, are led by physicist, Eloy Sira, IVIC's current Director; Juan Alfonso, Head of Antarctic Studies, along with the journal documentation of Maria Teresa Curcio.
- In the treatment of cancer, the recipient of the 'Terry Fox Award', Dr Manuel Rieber, has been leading important analyses on glucose and glutamine as agents that could limit tumour metabolism and therefore the proliferation of malignant cells. The studies have shown that interfering in glucose metabolism is a way to increase the effectiveness of some types of anti-tumour chemotherapy. Rieber is a collaborator for the European Institute of Oncology (IEO), through the journal *Ecancer Medical Science*.
- In the petroleum sector, a group of experts from IVIC, in a joint study with Nieves Canudas, a professor at the Simón Bolivar University (USB), is working on the development of new therapies for the treatment of burns, particularly injuries related to electric and gasoline use that are common in the industry. New compounds with antimicrobial properties may in the future be applied to the skin. The development of artificial human skin is a challenge that will hopefully help bring about successful skin transplants using polymeric materials.

In point of fact, and to summarize, the participation of Venezuela in contemporary scientific and academic ventures has seen positive results. Several postgraduate students have had the chance to research and work with the European Organization of Nuclear Research (CERN) during its undertaking to predict the fundamental particle, or the Higgs boson. Similarly, the emblematical Massachusetts Institute of Technology (MIT) appointed as its President in 2012, the Venezuelan electrical engineer and expert in nanotechnology, Rafael Reif. He is recognized for his constructive efforts at increasing diversity in the institute's faculty, as well as the successful implementation of a strategy that allowed MIT to cope successfully with the global financial crisis that affected the institute in varying ways.

The fact is that varying contributions, made in the advancement of science, whether from Venezuela or different locations and latitudes around the world, have enabled the quality of life of millions of people to be improved. Breakthroughs in computational science, or advancement in stem cell research, which could provide boundless medical opportunities for treating ill-health, are just some of the aspects that offer optimism for the future.

But what is occurring with the handling of the abiotic natural resources of water or air that, problem-wise, signifies the use of volatile organic compounds (VOCs)? Is technology progressing in this direction too? The captivating ability of humans to be creative can also lead to the exclusion of the essential. The apparent simplicity of certain things, in reality carries key consequences to our way of living.

Today, with the global population increase and the awareness of some that planet Earth needs to be better utilized, a science with ecological orientation — with a sense of 'prioritizing' — is more than ever essential. If in this practise some monetary savings come along the way, then surely it becomes a science of dividends. Not in vain then that the shoots of environmental awareness taught at IVIC are forever germinating among the institute's graduates, who have pressed for innovation of major proportions in the fields of environment and health care.

Reflections on 'colour,' searching for serendipity in nature

One important field to consider for both scientific research and the productive sector is the formulation of paints, a process that has a direct bearing on the use of VOCs. Since Aristotle developed the first known theory of colour, individuals have associated this subject, in one way or another, with the state of mind. Beyond, the colour manifested in paint has been assumed as being an intrinsic aspect of reality.

Nature and living beings are outlined and perceived with colour. In keeping with industrialization — a vast and growing universe of products and physical structures created by humankind — ever more colours are needed, meaning more paints. In turn, more VOCs are released.

So what is paint and how difficult is it to produce? In simple terms, paint has more than a dozen definitions and various nouns can be used to describe it: substance, mixture, layer, and liquid are all part of paint's conceptualization. While some of these words apply, the truth of the matter is that paint is really a "complex system".

But however complex, it is possible to make a general categorization of two classes: water-based paints (water

as a solvent), and organic/synthetic paints (mineral spirits, xylol, etc, as a solvent). The indiscriminate use of paints has generated a multiple and complex penetration of volatile organic substances in the environment. This realization has, over time, led to the development of ecological paints (low odour and possibly without toxic components).


Shutterstock


IVIC

Top, preparing paint components requires a rigorous process which ultimately should offer a product of quality that is also good for people's health and the environment alike. Bottom is the Square Garden Bolivar and Bello at IVIC, an example of preserved nature in a microclimate context.

Within this scheme, a Colombian scientist, inspired and trained at IVIC, oriented his line of investigation. Nowadays it can offer some interesting alternatives. Remembered among his peers as a brilliant lecturer in the field of alkyd resins (a complex oil-modified polyester), in 1980, the chemist, Saúl Castro Ordóñez, concluded studies at the institute that yielded valuable findings on 'saturnism' (lead disease). At the time, it offered valuable support to paediatric medicine in Venezuela in the treatment of the disturbingly recurrent lead poisoning, as interior paints and gasoline were made with a high lead content back then.

During the 1970s, in the United States, the Agency for Toxic Substances and Disease Registry (ATSDR), announced results showing that one in seven children had a high level of lead in his/her blood. A major reason for this was the individuals' exposure to peeling paint. Conversely, women in the prenatal stage of pregnancy who came into contact with lead, were prescribed as being able to pass it on to the embryo.

The components for the manufacture of water-based paints basically number three — pigments and fillers, the binder, and additives. The additives have specific functions in the formulation of paints. One of them is the agent of neutralization, which for many years was ammonia (a very toxic component). Influenced by the need for environmental technology that was more focused on coloured physical structures at the level of the troposphere (low atmosphere where humans live), exactly where greater and 'invisible' concentrations of VOCs are directly harmful to human health, Castro Ordóñez, after acute observation and many years of experimentation, formulated the 'multifunctional' additive DATE-P, which was able to adequately replace the ammonia used in the process.

Produced by Química 'Cosmos' SA, this additive allowed the regulation and adjustment of the pH level in water-based paints that are used on concrete walls, for interior architectonical/decorative purposes. Also, among other advantages, when applied under specific conditions, it reduced the amount of dispersants used. In other words, if the toxic components can be replaced by components with low VOCs, it is possible to say that an architectonic — more environmentally friendly — vinyl has been obtained (low odour and possibly without toxic components). It should then be able to improve indoor air quality, which is something that architects and interior

designers should be striving for, or at least showing some level of responsibility in the matter.

In organic/synthetic paints (enamels, varnishes, anticorrosive air-dry paints and also baking enamels) alkyd resins are widely used as the major component and these are diluted in a volatile solvent such as mineral spirits, xylene, etc — depending on the type of alkyd resin employed.

It is also possible to work with alkyd resins that are totally diluted in water, but the cost is up to three times higher than those diluted in volatile organic solvents. Facing the problem of cost, Castro Ordóñez formulated another innovative solution denominated technology — INVIMAR-LVA. This was based on an emulsifier that allowed adding 'water' to organic/synthetic paints without compromising the emulsion stability of water in oil (W/O) and oil in water (O/W), thus defying, in the process, the well-known scientific allegory over the idea that water and oil do not mix well together.

Sustainable development approach

Presently, worldwide, apart from INVIMAR-LVA, there are a few other commercial systems or products designed to reduce the toxic components of organic/synthetic paints. However, the significance of the research carried out by Castro Ordóñez lay in a truly sustainable development approach. Firstly, it replaced with water nearly 50 per cent of the volatile organic solvent in a gallon of paint. Therefore, the odour was at first reduced and then vanished completely shortly after being applied. As both outdoor air pollution and indoor air quality were conditioned to improve, this process diminished the negative effects on the health of the painter (applier), user (space inhabitant) and the producer (paint maker).

INVIMAR-LVA can work with alkyd resins of low or high viscosity. In a singular procedure, the different polyols that are hydrocarbons containing two or more functional groups of OH (organic alcohols) can be used 'interchangeably' and the emulsion rests stable. Simply put, it is not broken. Conventionally, there are restrictions with the use of polyols for emulsification. Some common polyols used for the emulsification of alkyd resins are glycerine and pentaerythritol.

Remarkably, all these functions are made possible with a very small dose per each gallon of paint produced. As the graduate of IVIC put it, the enamels and anticorrosive paints created with INVIMAR-LVA versatilely transform organic/synthetic paints into an eco-friendly product that fully complies with the quality standards of 'good bright and durability', in reducing the toxic components. In the process, a win-win situation takes place; the environment and the common individual both stand to benefit and the cost of production for the manufacturer is reduced considerably. How much water or additive is used for the formulation of colour remains the sacred secret among paint manufacturers. Financial resources, scientific knowledge, management and regulations over the use of VOCs all play a role. Of relevance, although VOCs negatively affect all humans equally, without regard to region, the VOCs' definition varies by area.

Looking at a few examples, contrary to what many people would probably think, Mexico has the strictest definition, while the most simple one is in Europe. The US, for its part, has the most flexible one, conforming to Eastman Chemical, a company elected by the Ethisphere Institute in 2014 as the world's most ethical company.

By the time the human eye processes the colours of the different structures that surround us it probably does not have a complete picture as to how difficult and consequential the production of paints really is. Perhaps the information to be disseminated needs to be more clearly in consonance with the mission of the public understanding of science.

The fact is that more than 230 million people are suffering from asthma and more than 3m people died in 2005 alone as a consequence of chronic respiratory diseases correlated to 'indoor' air pollution. This is reliable information released recently by WHO.

For the scientists at IVIC, technology should move forward without omitting the basis for human survival, such as health and the environment. It is matter of prioritization. Ideas to reach Mars are evolving and we do not yet know if this will ever happen. Whatever the case may be, a good knowledge of chemistry of materials will be central to bringing colour to other dimensions.

In keeping with Castro Ordóñez's accomplishments in organic chemistry, while computers keep us dreaming of the idea that somehow, today, everything is possible, there is still much to explore at the level of the four classical elements — fire, water, air and earth.

In the case of Venezuela, it might be better known internationally as a major exporter of crude oil, and it takes great pride in honouring and pursuing this fundamental function in the welfare configuration globally, but it is also clear that the country's influence in knowledge and talent through institutions such as IVIC is certainly another valuable commodity with true export potential.

OFID committed to alleviating energy poverty

Harnessing the favourable winds of Pakistan

The alleviation of energy poverty is a priority area for the OPEC Fund for International Development (OFID), which, together with much of the global community, considers universal energy access to be the "missing ninth" Millennium Development Goal (MDG). Since the Third OPEC Summit in November 2007 and the subsequent Solemn Declaration encouraging efforts in this regard, the Vienna-based institution has earmarked additional resources for the energy sector. In 2012 and 2013, OFID's energy sector approvals across all financing mechanisms have amounted to over $915 million. In keeping with the launch on January 1 of the UN 'Decade of Sustainable Energy for All' initiative, the OPEC Bulletin has been serializing articles depicting the different countries OFID is helping with energy loans. The third such article features Pakistan.

by Damelys Delgado, OFID Information Officer

Wind power is sustainable, clean and safe. It creates jobs and is economically competitive — and Pakistan has it in abundance. With the help of OFID and the private sector, steps are being taken to harness this untapped resource to satisfy an energy-starved population.

Heavy monsoon rains throughout 2010 caused one of the worst natural disasters Pakistan has experienced in over 50 years. Approximately one-fifth of the total land area was flooded, directly affecting about 20 million people. Damage was estimated at over $10.9 billion, around one-third of the country's annual budget.

The floods were the final straw for this country of 193m people, the sixth most populated nation on Earth. Already embattled by the global recession and the sharp rise in international food prices, Pakistan's economic growth, which averaged 7.3 per cent between 2004 and 2007 and was 4.1 per cent in 2008, ground to a halt.

Against these odds, the only option for the second-largest economy in South Asia was to begin again — using every possible means. Energy shortfalls constitute a major limitation on Pakistan's economic progress. Insufficient investment in the electricity network causes frequent power cuts, often lasting several hours in the main cities, and in extreme cases, up to 18 hours. To make matters worse, reliance on power plants that run on costly imported fuel has created tremendous budgetary pressure on the government.

During the night of February 24, 2013, a nationwide blackout left the entire country without electricity for almost two hours. The media reported: "Energy-starved Pakistan experiences daily power outages but complete breakdowns are rare." Thousands of Pakistanis flooded Twitter to report #blackout.

Due to the chronic scarcity of energy, and taking into account the future needs of the electricity sector, the government, in 2006, established the Alternative Energy Development Board (AEDB) to develop a national strategy for the use of alternative renewable energy resources. The diversification of energy resources would reduce the country's huge oil import bill. Currently, Pakistan produces 21.6 megawatts of energy from diverse sources, of which

thermal energy represents 67 per cent; hydroelectric power 30.3 per cent; and nuclear energy 2.14 per cent.

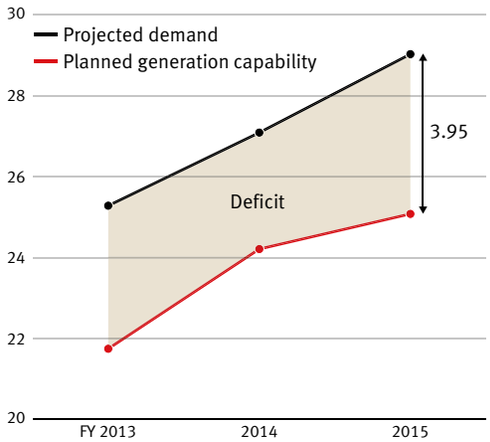
According to a report by the United Nations Development Programme, Pakistan has very high electricity production costs, but has immense wind resources that have not yet been harnessed.

To tap into this potential, the AEDB is encouraging investment from the private sector by offering tax breaks and other financial incentives for the installation of wind farms in selected areas.

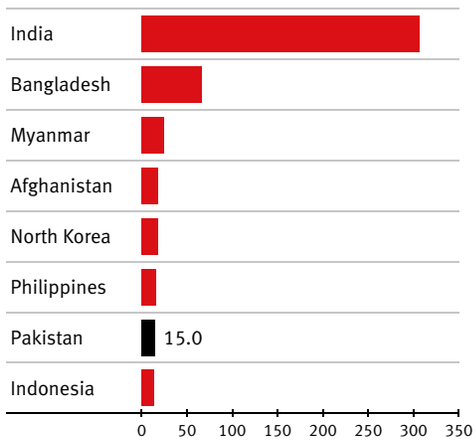
Pakistan's power crunch

The world's sixth most populous country is experiencing severe blackouts, with power outages lasting up to 20 hours a day across the nation. The deficit is expected to continue as demand outstrips generation capability.

Electricity demand and supply forecast
thousand megawatts per hour (MWh)



2010 Asian countries with highest deficit in access to electricity — *million people*



Sources: *Pakistan Credit Rating Agency; United Nations Environment Programme (UNEP).* REUTERS
C Chan 28/06/2013

The wind map of Pakistan was developed by the National Renewable Energy Laboratory of the United States, in collaboration with USAID, the Pakistan Meteorological Department and AEDB.

The results show that the Ghoro-Keti Bandar Wind Corridor, which runs 60 km along the coastline of Sindh Province and more than 170 km inland, has the potential to generate more than 50,000 MW of electricity. Coastal areas of Balochistan province and some northern areas also possess usable wind resources.

In a joint effort with the Islamic Development Bank (IsDB), OFID, through its Private Sector Facility, is supporting the construction of two wind farms which will add 100 MW of power to Pakistan's national grid.

The total cost of the scheme is around $260m, which is being funded on a combination of debt and equity. OFID is participating under an Islamic financing structure utilizing both instruments, with the equity component channeled through the Islamic Infrastructure Fund, alongside the IsDB and the Asian Development Bank.

Through risk participation with the IsDB, OFID has paved the way to tap the enormous potential of wind energy in Pakistan. The successful implementation of these projects is expected to bring in further investment for the development of more wind farms in the country.

Collectively known as the Fauji Wind Projects, two wind power plants, each with a capacity of 50 MW, will encourage the use of wind resources for low-carbon power generation.

Once operational, the new wind farms will reduce reliance on imported oil and diesel fuel for power generation, thereby relieving pressure on the country's foreign reserves. The power plants are located in the wind corridor approximately 50 km south-east of the city of Karachi on Kutti Kun New Island.

Said Taufik Ridha, OFID Private Sector Operations Officer in charge of the project, explained that the electricity generated by the new plants would be dispatched into the national grid and sold to the National Transmission and Dispatch Company to help fulfill the country's electricity requirements.

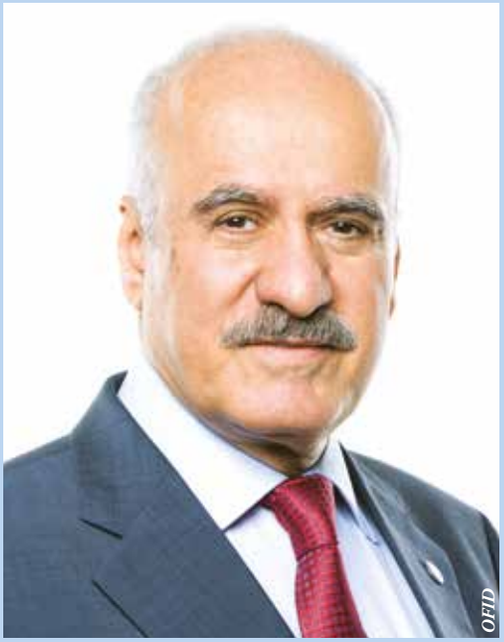
He highlighted the severity of the power deficit in Pakistan, where, he stressed, load shedding and rolling blackouts were negatively affecting the livelihoods of the people and the business community.

"This project will bring numerous benefits to the various stakeholders by reducing the country's electricity supply gap, decreasing dependence on expensive oil imports for power generation and harnessing the country's renewable energy potential," Taufik stated.

"Other aspects that need to be highlighted are the synergy between the co-financing development finance institutions and the local commercial banks involved. This project is also one of the few to be fully financed under a Shariah compliant Islamic financing structure," he added.

OFID Director-General leads high-level mission to Palestine

Holds talks with President Abbas, signs several grant agreements



Director-General of the OPEC Fund for International Development (OFID), Suleiman J Al-Herbish (above), in early April, led a delegation to Palestine, which included a meeting with Palestinian President, Mahmoud Abbas (r).

The Director-General of the OPEC Fund for International Development (OFID), Suleiman J Al-Herbish, in early April led a delegation from the Vienna-based institution on a visit to Palestine, which included a meeting with Palestinian President, Mahmoud Abbas.

The high-level mission, which was made for the primary purpose of reciprocating President Abbas's visit to OFID's headquarters in the Austrian capital last year, also featured the signing of several grant agreements in support of the Palestinian people.

According to an OFID press release, a number of important matters were discussed during Al-Herbish's meeting with the Palestinian President, including OFID's longstanding partnership with Palestine, which began over 35 years ago.

OFID scholarship scheme

In President Abbas's presence, the OFID Director-General signed a $500,000 grant agreement with Dr Mohammad Mustafa, Chairman of the Board of the Mahmoud Abbas Foundation, to fund a special OFID scholarship scheme that will enable 70 high-achieving students among Palestinian refugees in Lebanon to enroll in Lebanese universities.

At the signature ceremony, Al-Herbish emphasized the full commitment of OFID's Governing Board in support of Palestine's socio-economic development, which, he said, the institution treated as a priority.

He cited as an example an OFID-funded microfinance scheme

that enabled Palestinian families to start their own successful projects.

President Abbas thanked OFID for its efforts in helping Palestinians through the extension of grants across many different sectors, which, he said, was helping to alleviate poverty among numerous families.

OFID's five-day mission began in Amman, where Al-Herbish signed a $200,000 grant agreement with the President of the University of Jordan, Dr Ekhleif Tarawneh, in the presence of Dr Adnan Bakheet, the university's Director of the Centre for Documents and Manuscripts.

This grant will support a project implemented by the centre for the restoration of rare manuscripts from Jerusalem.

Hospital inauguration

Al-Herbish also inaugurated the OFID Surgical Department at Al-Ahli Hospital in Hebron. The Fund helped equip the establishment with a $1 million grant.

Elite members of the Palestinian leadership and Palestinian ministers participated in the inauguration ceremony.

Accoding to the press release, at this ceremony, Dr Jawad Naji, Palestinian Minister of National Economy, spoke of the supportive role played by OFID in providing many forms of assistance to the Palestinian people in the social, health, education and economic sectors.

He also thanked OFID's Ministerial Council for their tireless efforts in maintaining their steadfast commitment to helping improve the lives of millions of Palestinians.

In response, Al-Herbish affirmed OFID's ongoing commitment to the Palestinian people and the institution's pursuit of a permanent relationship with Palestine. He also spoke of the possibility of OFID expanding its Palestine grant programme once Palestine becomes an independent state.

The OFID Director-General also signed a $2.5m grant agreement with Ms Margot Ellis, Deputy Commissioner-General of the United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA).

Grant proceeds will co-finance a programme that will help improve the quality of education for some 1,600 pupils attending three schools at the Shu'fat Refugee Camp in East Jerusalem.

The OFID delegation also visited the Shu'fat schools and Budrous village in northwest Jerusalem, where a tree had been planted in honor of Al-Herbish and OFID in an olive grove dedicated to "UNRWA's friends".

A signing ceremony also took place with the UN Development Programme (UNDP) when Al-Herbish inked four grant agreements totaling $3.3m with Frode Mauring, Special Representative of the Administrator of the UNDP Programme of Assistance to the Palestinian People (UNDP/PAPP) for the following projects/programmes:

- $500,000 to provide renewable energy generation systems for St Joseph's Hospital in East Jerusalem to address electricity shortages and reduce operational costs.
- $1.5m to renovate and rehabilitate 200 housing units in East Jerusalem that are owned by poor and marginalized families, representing around 1,500 people.
- $500,000 to establish a neurology department at the Al-Makassed Hospital in East Jerusalem to meet the growing needs of the population.
- $800,000 to renovate and/or expand maternal health facilities in the Gaza Strip.

The delegation also toured UNDP/PAPP sites restored under the above-mentioned housing rehabilitation project and a number of other ongoing UNDP project sites in the city.

On conclusion of the mission, a visit was made to the Edward Said National Music Conservatory Headquarters in Jerusalem, where a $100,000 grant agreement was signed with Ms Rima Tarazi, Chairperson of the Governing Supervisory Board of the Conservatory, to support the establishment's academic and cultural activities that encourage creativity, innovation and the culture of diversity and steadfastness among Palestinian children.

OFID-hosted events

Following the grant signature were two OFID-hosted events — a short concert performance by students of the conservatory, and a farewell reception that was attended by the Governor of Jerusalem, Adnan El Husseini, and high-level representatives of OFID's partners in Palestine.

The UN General Assembly have proclaimed 2014 the International Year of Solidarity with the Palestinian People. OFID, in marking this year, is increasing the visibility of its support to the Palestinian People.

Administration and HR Head departs OPEC

Alejandro Rodrigues Rivas (l), for seven years Head of the Finance and Human Resources Department (FHRD) at the OPEC Secretariat in Vienna, has left the Organization.

Rodriguez Rivas, from Venezuela, was honoured at a special staff leaving celebration in April, where he was presented with his leaving gift by OPEC Secretary General, Abdalla Salem El-Badri (r).

Rodriguez Rivas, who joined the Secretariat in April 2006, completed his term as FHRD Head, in July 2013.

He then became an Advisor to the Organization, a position he completed in March 2014.

Legal Adviser completes OPEC term

Ali Nasir (l), who for seven years was Legal Advisor, International Matters, in the OPEC Secretariat's Legal Office, has left the Organization.

A native of Indonesia, he was honoured at a staff leaving reception in April, where he was presented with his leaving gift by Dr Omar S Abdul-Hamid (r), Director of OPEC's Research Division.

Nasir joined the Secretariat in December 2006 and completed his term as Legal Advisor, International Matters, in December 2013.

He was then retained as an Advisor until April this year.

Forthcoming events

Iraq future energy, May 18–20, 2014, Amman, Jordan. Details: The Exchange Ltd, 5th Floor, 86 Hatton Garden, London EC1N 8QQ, UK. Tel: +44 207 067 1800; fax: +44 207 242 2673; e-mail: marketing@theenergyexchange.co.uk; website: www.theenergyexchange.co.uk/event/iraq-future-energy-4th-edition.

4th Annual global pipeline integrity summit, May 19–21, 2014, Abu Dhabi, UAE. Details: Fleming Gulf Conferences, Dubai Airport Free Zone, PO Box 54772, Dubai, UAE. Tel: +971 4 60 91 555; fax: +971 4 60 91 589; e-mail: info@fleminggulf.com; website: http://energy.fleminggulf.com/pipeline-integrity-summit.

11th Maghreb, Mediterranean, MidEast upstream conference, May 19–21, 2014, Nicosia, Cyprus. Details: Global Pacific Partners, Suite 7, 4 Montpelier Street, Knightsbridge, London SW7 1EE, UK. Tel: +44 207 589 7804; fax: +44 207 589 7814; e-mail: babette@glopac.com; website: www.petro21.com.

World XTL 2014 summit, May 19–21, 2014, London, UK. Details: CWC Associates Ltd, Regent House, Oyster Wharf, 16–18 Lombard Road, London SW11 3RF, UK. Tel: +44 207 978 000; fax: +44 207 978 0099; e-mail: sshelton@thecwcgroup.com; website: www.cwcxtl.com.

Flame 2014, May 19–22, 2014, Amsterdam, The Netherlands. Details: ICBI Conferences Ltd, 8th Floor, 29 Bressenden Place, London SW1E 5DR, UK. Tel: +44 207 915 5103; fax: +44 207 915 5101; e-mail: info@icbi.co.uk; website: www.icbi-flame.com.

Gas flaring management summit, May 19–22, 2014, Abu Dhabi, UAE. Details: Fleming Gulf Conferences, Dubai Airport Free Zone, PO Box 54772, Dubai, UAE. Tel: +971 4 60 91 555; fax: +971 4 60 91 589; e-mail: info@fleminggulf.com; website: http://energy.fleminggulf.com/gas-flaring-management-summit.

World shale oil and gas: the Europe summit, May 20, 2014, Kiev, Ukraine. Details: CWC Associates Ltd, Regent House, Oyster Wharf, 16–18 Lombard Road, London SW11 3RF, UK. Tel: +44 207 978 000; fax: +44 207 978 0099; e-mail: sshelton@thecwcgroup.com; website: www.europe.world-shale.com.

Oil, gas and petrochemicals contracts summit, May 20–21, 2014, Abu Dhabi, UAE. Details: Fleming Gulf Conferences, Dubai Airport Free Zone, P O Box 54772, Dubai, UAE. Tel: +971 4 60 91 555; fax: +971 4 60 91 589; e-mail: info@fleminggulf.com; website: www.fleminggulf.com.

Turkmenistan gas congress, May 20–21, 2014, Ashgabat, Turkmenistan. Details: ITE Group plc, Oil and Gas Division, 105 Salusbury Road, London NW6 6RG, UK. Tel: +44 207 596 5233; fax: +44 207 596 5106; e-mail: oilgas@ite-exhibitions.com; website: www.turkmenistangascongress.com.

The 4th conference and exhibition China sourcing summit on petroleum equipment, May 21–22, 2014, Beijing, PR of China. Details: The Oriental Pro-Energy Consulting Organization (Topco), R2502, No 201b, Zhujiang Dijing, No 28, Guangqu Rd, Chaoyang Dist, Beijing PR of China. Tel: +86 10 58 63 43 46; fax: +86 10 58 63 22 91; e-mail: topco@topcoevents.com; website: www.petroequipsourcing.com.

Baghdad international oil and gas exhibition, May 21–24, 2014, Baghdad, Iraq. Details: Expotim International Fair Organizations Inc; Fulya Mah, Vefa Deresi Sok, No. 9 34394 Sisli, Istanbul, Turkey. Tel: +90 212 356 00 56; fax: +90 212 356 00 96; e-mail: info@baghdadoilgas.com; website: www.baghdadoilgas.com.

2nd Uganda mining, energy and oil and gas conference and exhibition, May 22–23, 2014, Kampala, Uganda. Details: AME Trade Ltd – Africa and Middle East Trade Ltd, Unit 408, United House, 39–41 North Rd, London N7 9DP, UK. Tel: +44 207 700 4949; fax: +44 207 681 3120; e-mail: trade@ametrade.org; website: www.petroleumafrica.com.

5th annual European bunker fuel conference, May 22–23, 2014, Rotterdam, The Netherlands. Details: Platts, 20 Canada Square, Canary Wharf, London E14 5LH, UK. Tel: +44 207 1766142; fax: +44 207 176 8512; e-mail: cynthia_rugg@platts.com; website: www.platts.com/conferencedetail/2014/pc490/index.

Drilling in ice-affected regions, May 22–23, 2014, London, UK. Details: IBC Global Conferences, The Bookings Department, Informa UK Ltd, PO Box 406, West Byfleet KT14 6WL UK. Tel: +44 207 017 55 18; fax: +44 207 017 47 15; e-mail: energycustserv@informa.com; website: www.ibcenergy.com/event/drilling-ice-affected-regions-course.

Offshore support vessel conference Brazil, May 22–23, 2014, Rio de Janeiro, Brazil. Details: IBC Global Conferences, The Bookings Department, Informa UK Ltd, PO Box 406, West Byfleet KT14 6WL UK. Tel: +44 207 017 55 18; fax: +44 207 017 47 15; e-mail: energycustserv@informa.com; website: www.informamaritimeevents.com/event/OSV-conference-brazil.

LatAm LPG trade summit, May 26–27, 2014, Panama City, Panama Details: Centre for Management Technology, 80 Marine Parade Road #13–02, Parkway Parade, 449269 Singapore. Tel: +65 6345 7322 / 6346 9132; fax: +65 6345 5928; e-mail: cynthia@cmtsp.com.sg; website: www.cmtevents.com.

Philippines LNG, May 26–29, 2014, Manila, Philippines. Details: IBC Global Conferences, The Bookings Department, Informa UK Ltd, PO Box 406, West Byfleet KT14 6WL UK. Tel: +44 207 017 55 18; fax: +44 207 017 47 15; e-mail: energycustserv@informa.com; website: www.lngphilippinessummit.com.

Drilling and well engineering East Africa, May 27–28, 2014, Dar-es-Salaam, Tanzania. Details: IQPC Ltd, Anchor House, 15–19 Britten Street, London SW3 3QL, UK. Tel: +44 207 368 9300; fax: +44 207 368 9301; e-mail: enquire@iqpc.co.uk; website: www.drilltechafrica.com.

12th oil and gas Pakistan exhibition, May 28–30, 2014, Lahore, Pakistan. Details: Pegasus Consultancy (Pvt) Ltd, 2nd Floor Business Centre, Mumtaz Hassan Road, Karachi 74000, Pakistan. Tel: +9221 11 17 34 266; fax: +9221 32 41 07 23; e-mail: info@pegasusconsultancy.com; website: www.pogeepakistan.com.

Senior Research Specialist

The Organization of the Petroleum Exporting Countries (OPEC) has a vacancy based in Vienna, Austria, for a Senior Research Specialist in its Research Division/Petroleum Studies Department.

Main responsibilities:
Under the supervision of the Department Head, to coordinate and oversee the preparations of Departmental reports, publications, presentations and other output to the Governing Bodies and the general public to ensure accuracy, coherence, consistency, clarity of message as well as the timeliness of production, in liaison with other Departments. To contribute to the analyses and forecasts on short-term developments in the world economy and the international oil markets and reports on the findings. To draft and review departmental reports, publications and other output related to the oil market to ensure accuracy, coherence, consistency and clarity of message. To identify, collect and maintain data and information relating to the areas of work.

Requirements:
University degree in Economics or related subject; advanced degree preferred; 12 years of work experience; ten years in case of advanced degree

Skills and knowledge:
Research coordination; knowledge of the economics, structure and operation of the international oil industry; knowledge of oil market mechanisms and developments; excellent level of oral and written communication skills in English is essential; communication skills; analytical skills; presentation skills; interpersonal skills; customer service orientationl; initiative and integrity; proficiency in written and spoken English.

Offer:
Commensurate remuneration package ie monthly basic salary of €5,904 x 12 per year with tax-free benefits and six-week annual leave.

Applications:
Online applicants should quote '**Job Code 4.3.08**' in the 'Subject' field. An automatic reply will be sent to confirm the successful submission of the documents.

The deadline for receipt of applications is **May 18, 2014**. Acknowledgements will be sent to short-listed candidates only.

Secretary

The Organization of the Petroleum Exporting Countries (OPEC) has a vacancy based in Vienna, Austria, for a Secretary in its Research Division/Environmental Matters Unit.

Main responsibilities:
To arrange and record incoming correspondence (memos/letters/e-mails/invoices) and to assist in dispositions and distribution to the relevant staff, to monitor and keep the Unit informed regarding the status of follow up. To arrange and record outgoing correspondence (memos/letters/e-mails/invoices), to proof-read and provide necessary background information; to dispatch and file as required. To draft memos/letters/e-mails/other response statements as requested. To follow-up pending matters within the Unit and with other Division/Departments/Offices. To finalize the Unit's reports and presentations to Management and the Governing Bodies. To translate correspondence from German to English and vice versa as required.

Requirements:
Secondary School certificate plus special courses; three years of work experience.

Skills and knowledge:
Communication skills; interpersonal skills; customer service orientation; initiative; integrity; proficiency in written and spoken English

Offer:
Commensurate remuneration package ie monthly basic salary of €2,886 x 12 per year with tax-free benefits and six-week annual leave.

Applications:
Online applicants should quote **'Job Code 6.1.04'** in the 'Subject' field. An automatic reply will be sent to confirm the successful submission of the documents.

The deadline for receipt of applications is **May 18, 2014**. Acknowledgements will be sent to short-listed candidates only.

Applications:
Applicants should kindly complete the 'Application Form' which can be downloaded from our website (www.opec.org) and send it to:
OPEC
Finance & Human Resources Department
Helferstorferstrasse 17
A-1010 Vienna – Austria
or Email: recruitment@opec.org

Summer outlook for global oil product markets looks bright

April 2014

Global oil product markets are forecast to enjoy healthy demand in the summer months, according to OPEC's Monthly Oil Market Report (MOMR) for April.

A feature article in the publication said international oil product markets were expected to receive support from gasoline demand, not only from the ongoing recovery in consumption in the OECD region, but also increasing demand growth in Asia.

"Factors driving the improvement in the OECD have been the better-than-expected growth in the United States economy, increasing US car sales, and the European economies' return to growth," it commented.

The report said that, in Asia, rising gasoline demand had been driven by demand growth in China, where refineries – traditionally geared to high diesel production – had been switching yields towards gasoline to meet the continued increase in demand.

At the same time, it said, the diesel market should see support from the ongoing recovery in demand for that product in the OECD region.

"This would offset the reduction in growth coming from Asia, where the slowing pace of the Chinese economy has damped demand growth for diesel," the article observed.

On the supply side, said the MOMR, diesel production was projected to increase this year with around 700,000 b/d of additional refining capacity coming on line in the Middle East and China.

Meanwhile, in the Atlantic Basin, the addition of several hydrocrackers was expected to increase the availability of diesel in the region.

"Amid this improving balance in the diesel market, gasoline is expected to assume its traditional role as the main driver of the market during the summer season, supported by the on-going increase in demand."

The MOMR pointed out that, in the summer, the oil market was generally driven by product market developments, particularly gasoline and to some extent diesel demand.

In reviewing developments seen in recent months, it said that oil product markets in the fourth quarter of last year showed a mixed picture across the globe, with US heating fuel demand strengthening, supported by the severe winter.

"However, this was partially outweighed by reduced demand for motor fuels, as the extended cold snap disrupted driving habits, which limited some of the gains in refinery margins," it maintained.

The MOMR said that the extreme cold weather had also attracted higher imports of gasoil to the US East Coast, thus capping a further rise in prices.

With the end of winter, demand for heating fuels in the US had declined, encouraging a restart in exports in March with several cargoes scheduled to leave the US Gulf Coast, mainly to Latin America, West Africa and Europe.

In contrast, European margins continued to be impacted by reduced domestic demand. This was despite the open gasoil arbitrage to the US East Coast, which lasted until mid-March.

"Meanwhile, Asian refinery margins have maintained a slight recovering trend on the back of stronger demand, mainly from the petrochemical industry."

The report said that, now with the end of the winter season, oil markets had entered into a period of lower demand, which provided the opportunity to re-build tight product inventories in the OECD.

"Seasonal refinery maintenance this spring will also allow OECD crude stocks to replenish. These developments, along with the continued build in inventories in non-OECD Asia, will represent a supply buffer for the market ahead of the summer driving season," it stated.

MOMR oil market highlights ...

April 2014

The **OPEC Reference Basket** fell by $1.23 a barrel in March to average $104.15/b. Global crude oil markets were impacted by the slowing pace of economic growth in China, lower refinery demand, and ample supply, which outweighed supply disruptions and geopolitical tensions. The Nymex WTI front-month contract slipped by a marginal 17¢ to average $100.51/b, while ICE Brent dropped by $1.09 to average $107.75/b. This caused the Brent-WTI spread to narrow further, averaging $7.25/b in March.

World economic growth for 2014 has been revised down to 3.4 per cent, while the 2013 growth estimate remains at 2.9 per cent. The OECD is forecast to grow by 2.0 per cent in 2014, compared to 1.3 per cent in the previous year. China's growth for 2014 has been revised down to 7.5 per cent, following growth of 7.7 per cent in 2013. India's 2014 forecast remains at 5.6 per cent and the estimate for 2013 at 4.7 per cent.

World oil demand is forecast to grow by 1.14 million barrels/day in 2014, broadly unchanged from the previous report, to average 91.2m b/d. In 2013, world oil demand grew by 1.05m b/d to average 90.01m b/d, also in line with the prior assessment. The bulk of growth came from the non-OECD region, as most of the OECD was still showing a contraction.

Non-OPEC oil supply growth in 2014 was revised up to stand at 1.37m b/d. The estimate for 2013 growth was also increased slightly to 1.34m b/d. Growth in 2014 is seen coming mainly from the United States, Canada and Brazil, while Norway, the United Kingdom and Mexico are expected to see declines. OPEC natural gas liquids (NGL) production is forecast to average 5.95m b/d in 2014. In March, OPEC crude oil production, as estimated by secondary sources, averaged 29.61m b/d, down by 630,000 from the previous month.

Oil product markets in the Atlantic Basin have begun to weaken since mid-March on diminished support from heating fuel demand in the US. Product markets in Europe have also weakened, due to a decline in export opportunities. In Asia, the negative performance at the middle and bottom of the barrel outweighed the continued recovery in light distillates.

Dirty **tanker spot freight rates** declined in March, mainly on the back of lower tonnage demand and refinery maintenance in the east. Tonnage availability on many key routes continued to pressure tanker spot freight rates, which declined by five per cent. Clean tanker spot freight rates improved, with east and west of Suez rates up by seven per cent and ten per cent, respectively.

OECD commercial oil stocks continued to fall in February, driven by a decline in products, as crude stocks experienced a build. Compared to the five-year average, crude and product stocks showed deficits of 35m b and 96m b, respectively. In terms of days of forward cover, OECD commercial stocks rose by 0.2 day in February to stand at 56.5 days. In March, US total commercial oil stocks rose, but remained 36.0m b below the five-year average, with crude around 11.1m b above the seasonal norm.

Demand for **OPEC crude** in 2014 saw a downward revision of 100,000 b/d to average 29.6m b/d, representing a decline of 400,000 b/d compared to last year. Demand for OPEC crude in 2013 remains unchanged from the last MOMR at 30.0m b/d, which is 500,000 b/d lower than the previous year.

The feature article and oil market highlights are taken from OPEC's Monthly Oil Market Report (MOMR) for April 2014. Published by the Secretariat's Petroleum Studies Department, the publication may be downloaded in PDF format from our Website (www.opec.org), provided OPEC is credited as the source for any usage. The additional graphs and tables on the following pages reflect the latest data on OPEC Reference Basket and crude and oil product prices in general.

Table 1: OPEC Reference Basket crude oil prices

$/b

Crude/Member Country	2013 Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014 Jan	Feb	Mar	Weeks 9-13/14 (week ending) Feb 28	Mar 7	Mar 14	Mar 21	Mar 28
Arab Light – Saudi Arabia	107.61	101.97	101.06	101.30	105.03	108.09	109.48	107.14	104.84	108.07	105.74	106.30	104.80	107.59	106.60	104.59	103.75	104.22
Basrah Light – Iraq	104.17	98.22	98.23	98.94	103.24	106.07	106.61	103.69	101.63	105.12	102.70	103.38	102.10	104.57	104.14	101.99	101.01	101.31
Bonny Light – Nigeria	110.57	105.17	105.83	106.12	110.21	113.62	114.30	112.44	111.47	113.11	110.26	110.77	109.50	111.00	111.21	109.98	108.56	108.55
Es Sider – Libya	108.37	102.22	102.63	103.07	107.91	111.07	111.60	108.74	107.57	110.41	107.86	108.47	107.15	108.70	108.86	107.63	106.21	106.20
Girassol – Angola	109.48	103.84	103.69	104.23	107.55	110.80	112.13	110.20	108.83	111.31	107.96	109.54	108.67	110.50	110.13	108.83	107.66	108.20
Iran Heavy – IR Iran	105.47	99.71	99.72	100.61	103.65	107.06	109.15	107.69	106.87	108.96	104.89	104.96	104.01	105.94	105.09	103.78	103.26	103.81
Kuwait Export – Kuwait	105.17	100.07	99.82	100.22	103.22	106.47	108.02	106.13	104.73	107.30	103.79	104.17	103.05	105.33	104.50	102.80	102.17	102.67
Marine – Qatar	105.36	101.55	100.22	100.20	103.34	106.67	108.15	106.61	105.83	107.76	103.95	104.91	104.07	105.73	105.13	103.84	103.37	103.85
Merey* – Venezuela	98.55	93.84	94.02	95.37	95.68	98.06	97.85	96.80	94.83	96.61	93.72	94.00	93.23	94.25	94.46	93.08	92.19	93.21
Murban – UAE	108.45	104.46	102.83	102.61	105.58	109.18	111.14	110.13	109.36	111.22	107.66	108.69	107.60	109.68	108.80	107.31	106.86	107.36
Oriente – Ecuador	100.86	95.56	96.40	96.01	99.54	98.24	100.43	95.16	89.72	96.56	93.44	97.44	94.96	97.34	97.01	93.71	93.47	95.44
Saharan Blend – Algeria	108.87	102.97	102.83	102.07	107.56	111.87	112.95	111.04	109.27	112.66	109.96	110.52	108.95	110.75	110.66	109.43	108.01	108.00
OPEC Reference Basket	106.44	101.05	100.65	101.03	104.45	107.52	108.73	106.69	104.97	107.67	104.71	105.38	104.15	106.35	105.74	104.03	103.19	103.64

Table 2: Selected OPEC and non-OPEC spot crude oil prices

$/b

Crude/Member Country	2013 Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2014 Jan	Feb	Mar	Weeks 9-13/14 (week ending) Feb 28	Mar 7	Mar 14	Mar 21	Mar 28
Minas – Indonesia[1]	109.47	101.25	99.11	103.19	103.38	105.55	114.38	106.98	104.28	106.38	110.60	108.46	113.60	107.03	114.27	113.97	113.13	113.23
Arab Heavy – Saudi Arabia	103.16	98.50	98.98	99.64	101.78	105.33	106.72	105.04	104.90	106.77	102.21	102.34	101.63	103.33	102.69	101.36	100.91	101.46
Brega – Libya	108.62	102.67	103.03	103.27	108.11	111.52	112.15	109.29	108.17	111.01	108.46	109.12	107.80	109.35	109.51	108.28	106.86	106.85
Brent – North Sea	108.37	102.17	102.53	102.92	107.96	111.27	111.90	109.04	107.97	110.81	108.26	108.87	107.55	109.10	109.26	108.03	106.61	106.60
Dubai – UAE	105.55	101.68	100.30	100.32	103.52	106.81	108.28	106.70	105.95	107.80	104.01	105.04	104.32	106.03	105.39	104.06	103.61	104.11
Ekofisk – North Sea	110.43	103.53	103.60	103.79	108.77	112.54	113.69	110.28	108.88	111.85	109.06	110.06	108.60	110.53	110.25	108.96	107.76	107.72
Iran Light – IR Iran	108.52	101.27	100.98	101.73	105.54	109.17	110.47	108.19	106.52	108.98	105.33	106.47	105.63	107.43	106.91	105.63	104.69	105.35
Isthmus – Mexico	109.86	105.48	105.48	104.08	109.18	109.09	106.80	99.84	93.83	98.39	96.35	100.47	98.87	101.51	102.65	98.30	95.94	98.65
Oman – Oman	105.56	101.72	100.46	100.35	103.53	106.94	108.56	106.78	105.95	107.83	104.01	105.04	104.34	106.03	105.39	104.06	103.61	104.20
Suez Mix – Egypt	104.23	99.12	99.89	100.13	105.41	108.08	108.36	105.72	105.15	107.56	103.02	104.77	103.92	105.50	105.35	104.54	102.67	103.36
Urals – Russia	107.01	102.06	102.52	102.74	108.06	110.75	110.92	108.28	107.73	110.44	106.40	107.43	106.66	108.16	108.01	107.27	105.44	106.13
WTI – North America	92.87	91.97	94.60	95.74	104.51	106.55	106.26	100.41	93.76	97.72	94.90	100.78	100.53	102.58	102.76	99.25	99.42	100.51

Note: As per the decision of the 109th ECB (held in February 2008), the OPEC Reference Basket (ORB) has been recalculated including the Ecuadorian crude Oriente retroactive as of October 19, 2007. As per the decision of the 108th ECB, the ORB has been recalculated including the Angolan crude Girassol, retroactive January 2007. As of January 2006, monthly averages are based on daily quotations (as approved by the 105th Meeting of the Economic Commission Board). As of June 16, 2005 (ie 3W June), the ORB has been calculated according to the new methodology as agreed by the 136th (Extraordinary) Meeting of the Conference. As of January 2009, the ORB excludes Minas (Indonesia).

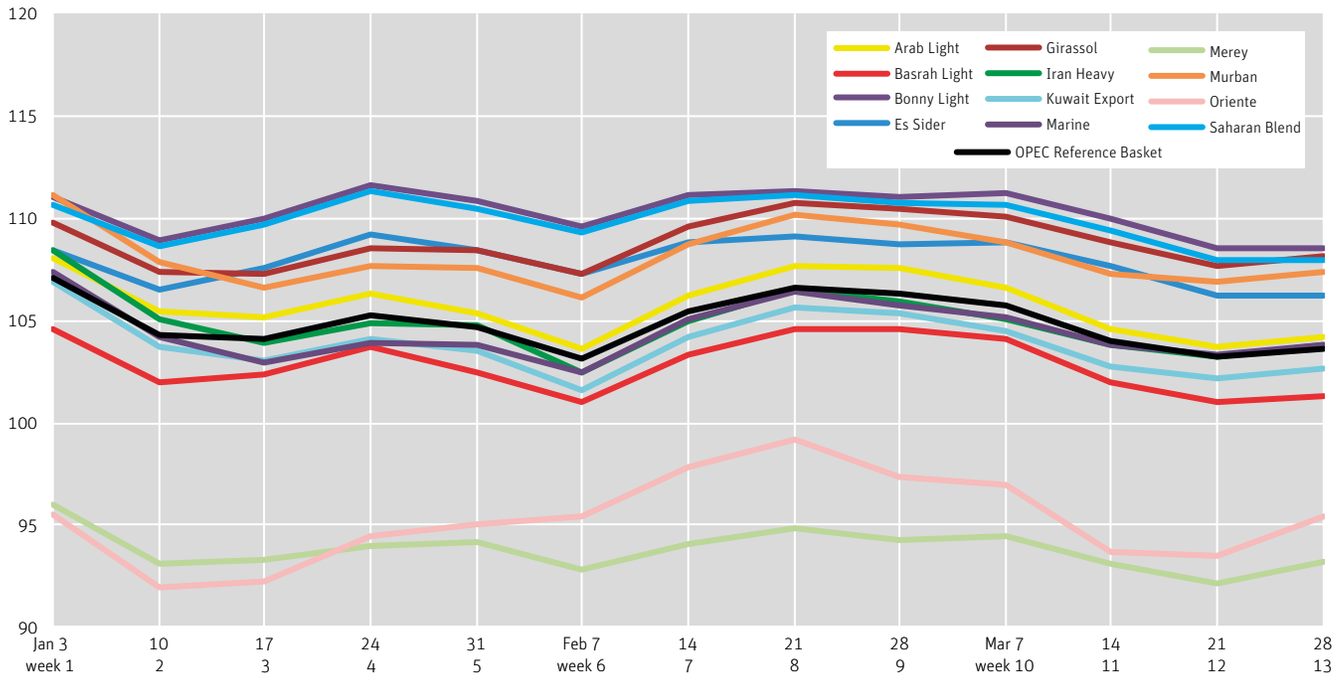
* *Upon the request of Venezuela, and as per the approval of the 111th ECB, BCF-17 has been replaced by Merey as of January 2009. The ORB has been revised as of this date.*

1. *Indonesia suspended its OPEC Membership on December 31, 2008.*

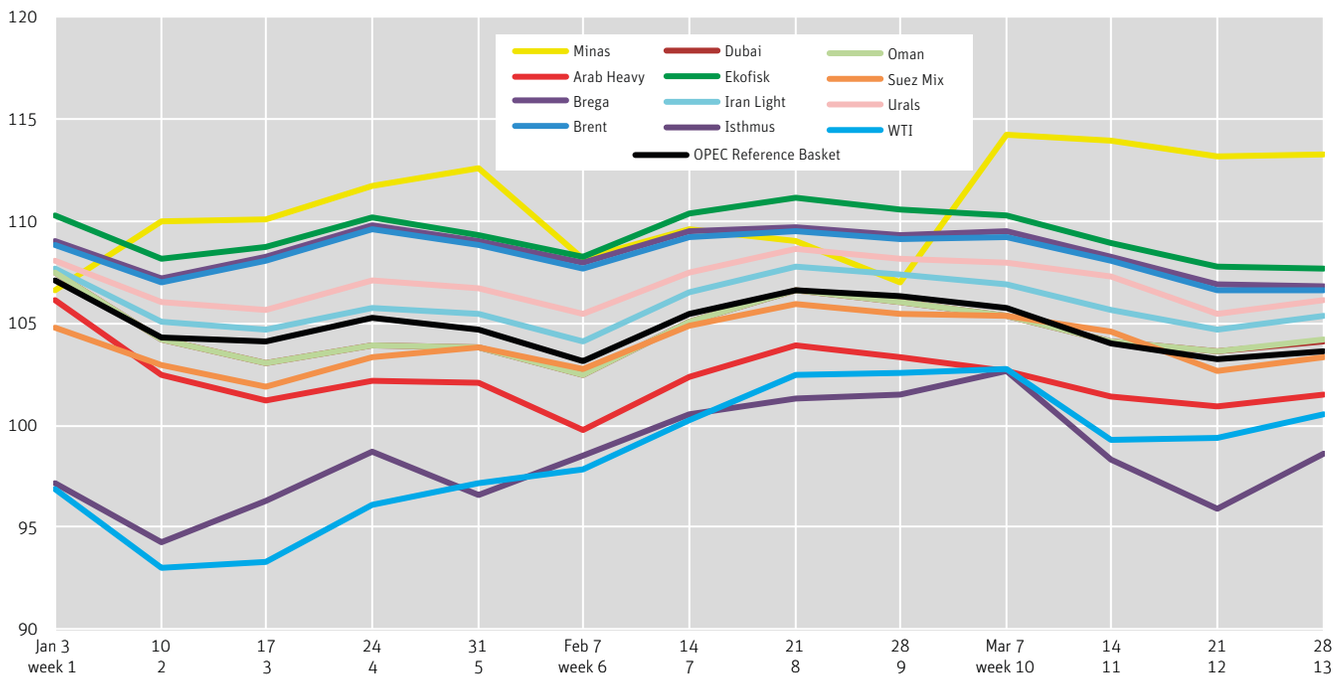
Brent for dated cargoes; Urals cif Mediterranean. All others fob loading port.

Sources: The netback values for TJL price calculations are taken from RVM; Platt's; Secretariat's assessments.

Graph 1: Evolution of the OPEC Reference Basket crudes, 2014 $/b



Graph 2: Evolution of spot prices for selected non-OPEC crudes, 2014 $/b

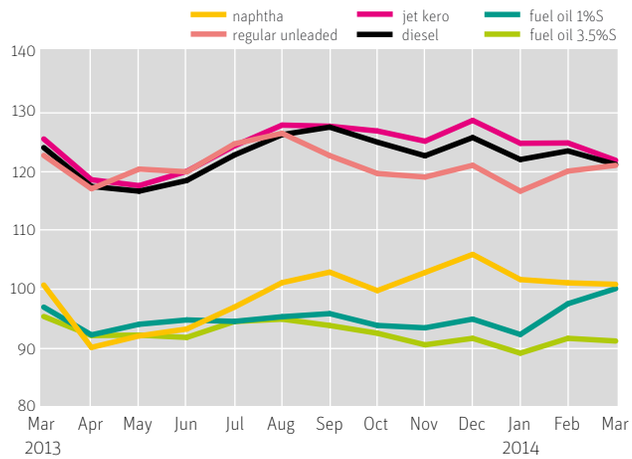


Note: As per the decision of the 109th ECB (held in February 2008), the OPEC Reference Basket (ORB) has been recalculated including the Ecuadorian crude Oriente retroactive as of October 19, 2007. As per the decision of the 108th ECB, the basket has been recalculated including the Angolan crude Girassol, retroactive January 2007. As of January 2006, monthly averages are based on daily quotations (as approved by the 105th Meeting of the Economic Commission Board). As of June 16, 2005 (ie 3W June), the ORB has been calculated according to the new methodology as agreed by the 136th (Extraordinary) Meeting of the Conference. As of January 2009, the ORB excludes Minas (Indonesia).
Upon the request of Venezuela, and as per the approval of the 111th ECB, BCF-17 has been replaced by Merey as of January 2009. The ORB has been revised as of this date.

Table and Graph 3: North European market — spot barges, fob Rotterdam

$/b

		naphtha	regular gasoline unleaded	diesel ultra light	jet kero	fuel oil 1 per cent S	fuel oil 3.5 per cent S
2013	March	100.70	122.54	123.85	125.31	96.98	95.40
	April	90.19	116.92	117.31	118.43	92.30	92.19
	May	92.13	120.23	116.51	117.44	94.09	92.26
	June	93.29	119.78	118.31	119.85	94.82	91.87
	July	96.98	124.48	122.60	124.14	94.57	94.55
	August	101.10	126.26	126.03	127.64	95.36	94.95
	September	102.87	122.50	127.30	127.45	95.88	93.88
	October	99.76	119.49	124.77	126.65	93.89	92.58
	November	102.81	118.89	122.47	124.93	93.49	90.63
	December	105.86	120.87	125.54	128.43	94.96	91.72
2014	January	101.62	116.51	121.84	124.57	92.37	89.22
	February	101.07	119.89	123.29	124.63	97.55	91.72
	March	100.82	120.86	121.01	121.71	100.10	91.27



Note: Prices of premium gasoline and diesel from January 1, 2008, are with 10 ppm sulphur content.

Table and Graph 4: South European market — spot cargoes, fob Italy

$/b

		naphtha	premium gasoline 50ppm	diesel ultra light	fuel oil 1 per cent S	fuel oil 3.5 per cent S
2013	March	97.68	120.98	122.98	96.03	94.69
	April	87.46	116.61	116.12	91.59	90.74
	May	89.61	116.33	115.82	94.14	90.75
	June	91.01	116.40	117.70	95.54	91.90
	July	94.51	121.89	122.76	94.27	93.85
	August	98.53	124.28	125.75	95.63	94.35
	September	100.74	119.30	126.39	96.39	94.09
	October	97.78	114.49	125.15	93.94	92.18
	November	100.56	112.43	123.29	93.94	91.29
	December	102.81	115.53	126.27	95.90	90.93
2014	January	98.76	113.28	123.07	92.94	90.16
	February	98.45	116.41	124.05	98.88	91.58
	March	97.86	115.23	121.46	100.69	90.48

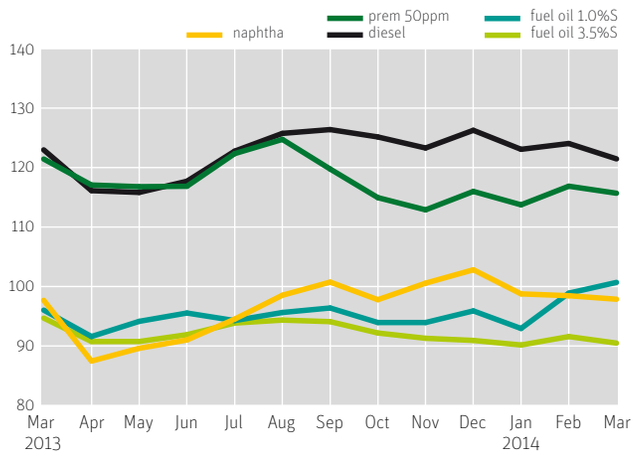
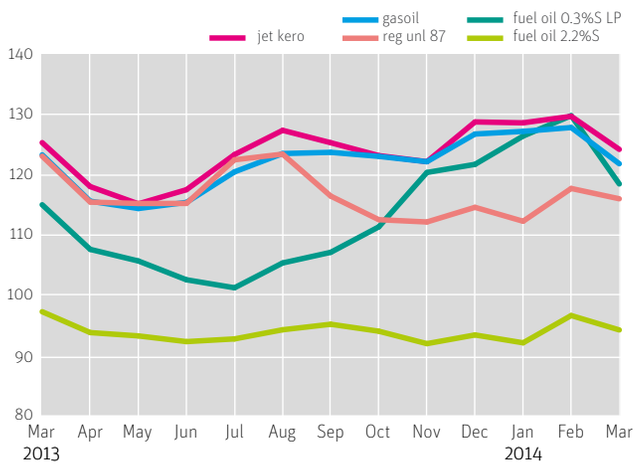


Table and Graph 5: US East Coast market — spot cargoes, New York

$/b, duties and fees included

		regular gasoline unleaded 87	gasoil	jet kero	fuel oil 0.3 per cent S	fuel oil 2.2 per cent S
2013	March	123.04	123.26	125.29	114.95	97.15
	April	115.39	115.54	117.97	107.52	93.67
	May	115.16	114.32	115.10	105.59	93.12
	June	115.17	115.34	117.45	102.46	92.17
	July	122.43	120.42	123.30	101.13	92.62
	August	123.37	123.47	127.33	105.26	94.14
	September	116.39	123.67	125.27	107.03	95.06
	October	112.46	123.00	123.13	111.27	93.90
	November	112.08	122.11	122.12	120.32	91.83
	December	114.52	126.72	128.73	121.67	93.28
2014	January	112.20	127.16	128.58	126.38	91.97
	February	117.66	127.80	129.67	129.77	96.51
	March	115.94	121.77	124.16	118.41	94.11



Source: Platts. Prices are average of available days.

Table and Graph 6: Caribbean market — spot cargoes, fob

$/b

		naphtha	gasoil	jet kero	fuel oil 2 per cent S	fuel oil 2.8 per cent S
2013	March	119.80	123.60	125.96	94.15	91.25
	April	97.11	116.33	119.14	90.67	87.48
	May	93.77	115.81	116.04	90.12	86.64
	June	88.24	117.61	117.88	89.26	84.81
	July	105.97	121.79	123.23	90.10	85.10
	August	107.39	125.58	127.83	91.94	86.94
	September	106.06	124.68	124.38	94.10	89.10
	October	104.98	123.37	122.88	91.43	86.43
	November	103.69	120.25	119.92	89.69	84.69
	December	113.46	124.38	125.53	91.69	86.69
2014	January	110.69	121.90	123.68	89.50	84.50
	February	107.77	122.19	126.34	92.60	87.60
	March	108.79	121.01	122.93	91.83	86.83

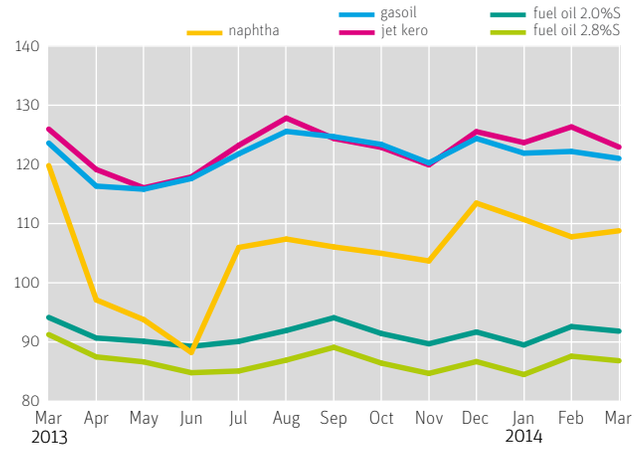


Table and Graph 7: Singapore market — spot cargoes, fob

$/b

		naphtha	premium gasoline unl 95	premium gasoline unl 92	gasoil	jet kero	fuel oil 180 Cst	fuel oil 380 Cst
2013	March	102.09	124.00	120.78	123.64	123.50	99.53	98.49
	April	93.43	113.95	110.77	116.77	116.20	96.42	95.45
	May	93.56	114.40	111.08	116.72	115.37	95.87	94.19
	June	94.16	117.85	114.75	119.28	116.75	96.81	93.38
	July	97.70	121.73	118.79	123.14	121.18	95.23	93.15
	August	101.01	117.11	114.67	124.14	124.73	97.82	94.46
	September	102.76	117.31	114.28	123.57	123.87	96.30	94.48
	October	100.20	114.36	111.60	123.89	123.08	96.88	95.69
	November	103.69	114.89	111.94	123.34	122.63	96.32	93.88
	December	107.53	118.66	115.81	126.33	126.68	97.02	94.92
2014	January	104.47	117.98	114.66	121.56	121.63	96.46	94.56
	February	102.37	119.71	116.70	123.53	122.78	96.29	94.83
	March	102.08	119.37	116.53	121.68	119.99	95.00	93.13

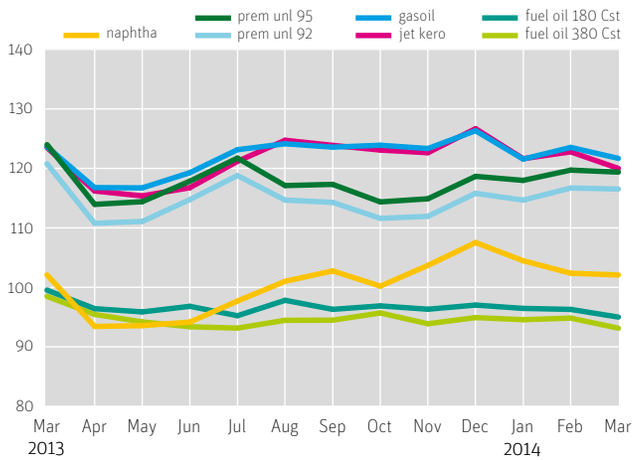
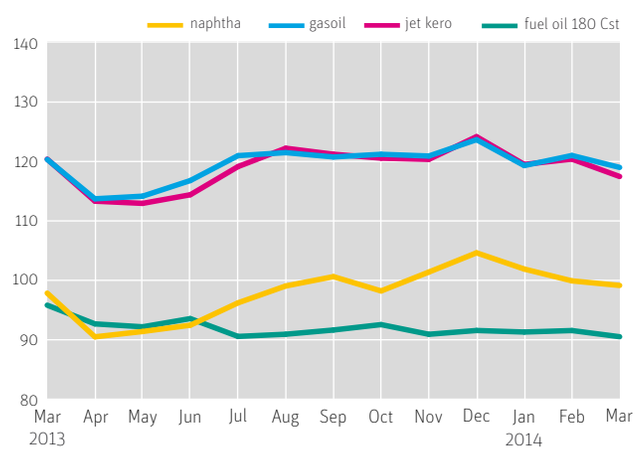


Table and Graph 8: Middle East Gulf market — spot cargoes, fob

$/b

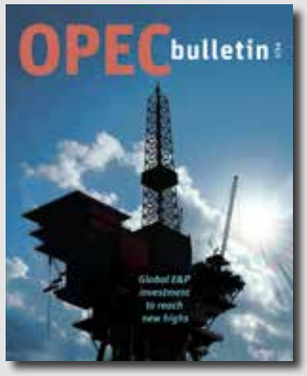
		naphtha	gasoil	jet kero	fuel oil 180 Cst
2013	March	97.85	120.35	120.40	95.82
	April	90.49	113.72	113.32	92.67
	May	91.39	114.16	112.95	92.18
	June	92.45	116.79	114.40	93.56
	July	96.21	120.98	119.14	90.56
	August	99.05	121.49	122.23	90.93
	September	100.62	120.76	121.22	91.64
	October	98.21	121.21	120.56	92.55
	November	101.39	120.92	120.35	90.92
	December	104.63	123.67	124.18	91.56
2014	January	101.90	119.31	119.51	91.30
	February	99.91	121.01	120.40	91.55
	March	99.14	119.00	117.47	90.51

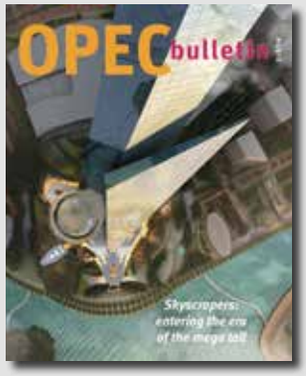


Source: Platts. Prices are average of available days.

OPEC offers a range of publications that reflect its activities. Copies can be obtained by contacting this Department, which regular readers should also notify in the event of a change of address:

PR & Information Department, OPEC Secretariat
Helferstorferstrasse 17, A-1010 Vienna, Austria
Tel: +43 1 211 12-0; fax: +43 1 211 12/5081; e-mail: prid@opec.org





OPEC Bulletin
(free of charge)

Annual Statistical Bulletin 2013 *(free of charge)*

104-page book with CD
The CD (for Microsoft Windows only) contains all the data in the book and much more.

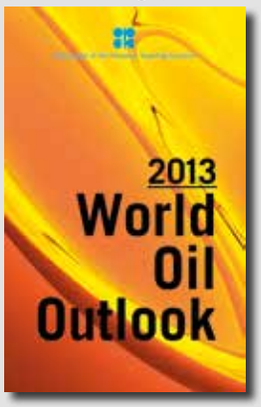
- Easy to install and display
- Easy to manipulate and query
- Easy to export to spreadsheets such as Excel

OPEC Monthly Oil Market Report *(free of charge)*

- Crude oil and product prices analysis
- Member Country output figures
- Stocks and supply/demand analysis

Annual Report 2012
(free of charge)

World Oil Outlook 2013
(free of charge)



OPEC Energy Review

Contains research papers by international experts on energy, the oil market, economic development and the environment. Available quarterly only from the commercial publisher. Annual subscription rates for 2013:

	Institutional			Personal
	Online	Print & online	Print	Print & online
Americas $	720	827	720	191
UK £	429	493	429	115
Europe *(others)* €	544	627	544	£115
Europe *(EU)* €	544	627	544	170
Rest of world $	840	967	840	£115

Orders and enquiries:
Blackwell Publishing Journals, 9600 Garsington Road, Oxford OX4 2DQ, UK.
Tel: +44 (0)1865 776868; fax: +44 (0)1865 714591; e-mail: cs-journals@wiley.com; http://onlinelibrary.wiley.com/

www.opec.org