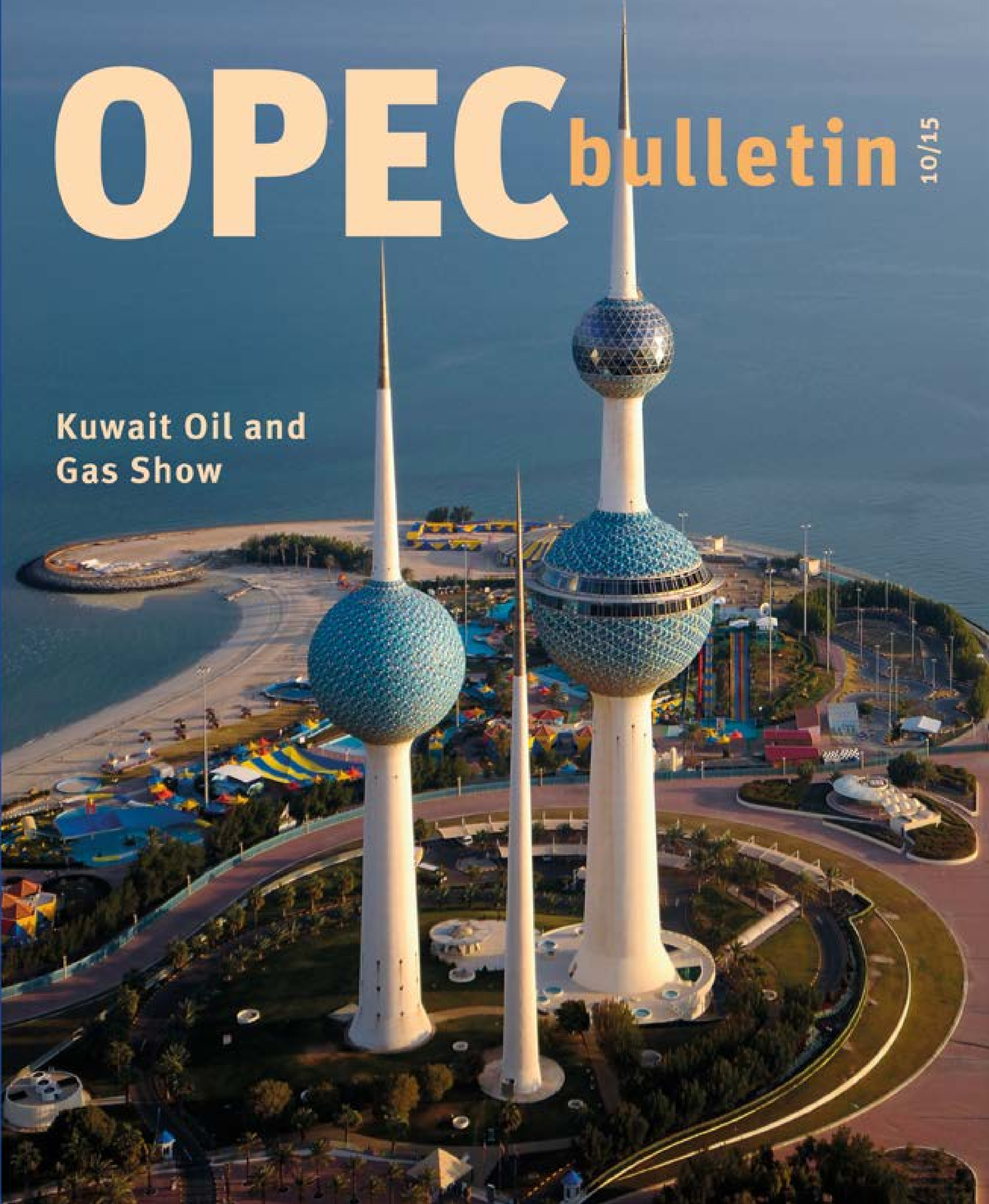
OPEC bulletin

10/15

Kuwait Oil and Gas Show




Visit our website
www.opec.org

A brave new world ...

Since the dawn of civilization, traders seeking to sell their products and services at a profit have been mindful of one particular set of criteria — the laws of supply and demand. Separately, these two trading components are polar opposites. But together, they become intrinsically linked to form one of the most basic concepts of microeconomics. Yet, there is nothing basic about their connotation in running a successful operation. When they are out of kilter, there are invariably consequences, either for the trader, the customer — or even both.

As any businessman will tell you, a healthy trading environment is one where supply and demand are in tune. Companies the world over continually strive to create a balance in their trading activities. They are cognizant of the fact that, as a general rule, if there is low supply and high demand, the price of the product or commodity will be high. In contrast, the greater the supply, the lower the demand … and the lower the price will be. That is why stability is so vital to their operations. The lesser the volatility, the better the prevailing conditions for making prosperous transactions.

Trading on the international oil market is no different. It is governed by the same set of rules; when the supply and demand balance is distorted, the price reacts — just as the last 12 months or so have shown.

Up until the beginning of September last year, international crude oil prices were relatively stable, averaging around $100/barrel. This level of price suited the producers, the consumers and, equally as important, the investors who need to provide oil capacity additions to meet the forecast increase in global demand in the future.

Everyone was happy.

But towards the end of the western hemisphere summer, it all began to change. Growing over-supply in the market, primarily from non-OPEC producers and, coupled with ever-unsettling speculation, led to a sustained price slide. Within three months and the start of a new year, prices had lost over 50 per cent of their average 2014 value. Today, they are still lying at around $45–50/b and considered inadequate for stakeholders' needs.

To say the last year has been challenging would be an understatement. The industry has had to adapt to a new set of conditions — and quickly. Sharply reduced earnings have meant enforced austerity, budget cuts and stringent cost evaluations across the board for the producers, the oil companies and the service firms. It has led to numerous project postponements or cancellations and huge job losses.

But the good news today is that the situation looks to be improving. As OPEC Secretary General, Abdalla Salem El-Badri, said at this year's Oil and Money conference in London, in October: "There is some light at the end of the tunnel."

Healthy oil demand growth, falling non-OPEC supply and higher expectations for 2016, especially for the call on OPEC crude, all point to the possibility of higher crude prices in the near future, he said.

However, the conference heard that the oil sector is by no means out of the woods. As El-Badri reminded delegates, there is still an overhang of 200 million barrels of crude in the market, which continues to pressure prices. The facts of the oversupply are clear — about 6m b/d of extra crude output has come from non-OPEC countries over the past seven to eight years, while OPEC has kept its output fairly steady.

That, said the OPEC Secretary General, is why it is so important for all oil producers — OPEC and non-OPEC alike — to work together and look at just how these excess barrels can be reduced.

El-Badri declared: "If the situation right now is a problem for all of us, including the United States, let us talk."

From its humble beginnings 55 years ago, to its position today as a high-profile integral stakeholder in the global energy industry, OPEC has remained steadfast in its commitment to maintaining oil market stability.

All its policy initiatives are aimed at ensuring adequate supplies of crude oil to the consumers at prices that are fair and reasonable for all market players.

But trading in the complex world of oil, a precious yet unpredictable commodity, requires a guiding hand — it needs nurturing, some form of supervision and direction that will help preserve the supply and demand balance everyone seeks and, importantly, the prevention of sharp and uncontrollable price fluctuations that serves no one's interest.

The key to all this lies in cooperation and dialogue among the main parties. The more we talk — the better we understand. And the better we understand, the easier it is to overcome the obstacles and challenges that will surely grow in volume and complexity as we progress in this fast-developing and increasingly demanding 21st century.

But one thing is clear. OPEC cannot be expected to be the sole guardian of the oil market's welfare — and nor should it! The international oil market is a shared responsibility and needs the help and support of all those who have a vested interest in it. And that means all producers — not just a chosen few.

This year's Oil and Money conference had the theme of *'The Brave New World of Energy'*. Fitting indeed because what is surely required now is courage, mettle and a concerted approach by all to ensure that the oil industry is lifted out of its current obscurity and put back on the road to prosperity.

Contents

OPEC bulletin

Cover

This month's cover shows the iconic towers in Kuwait City. The capital hosted the annual Oil and Gas Show, which was attended by OPEC Secretary General, Abdalla Salem El-Badri (see speech on page 6).
Image courtesy Shutterstock.

Vol XLVI, No 8, October 2015, ISSN 0474—6279

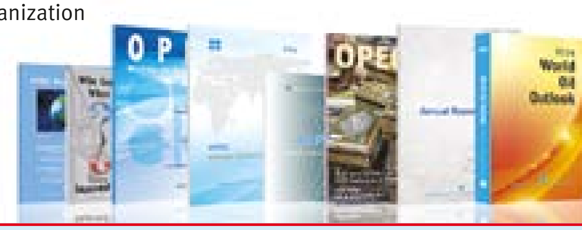
Publishers
OPEC
Organization of the Petroleum Exporting Countries
Helferstorferstraße 17
1010 Vienna
Austria
Telephone: +43 1 211 12/0
Telefax: +43 1 216 4320
Contact: The Editor-in-Chief, OPEC Bulletin
Fax: +43 1 211 12/5081
E-mail: prid@opec.org
Website: www.opec.org

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
Hasan Hafidh
Head, Finance & Human Resources Department
Jose Luis Mora
Head, Administration & IT Services Department
Abdullah Alakhawand

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
Hasan 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)
Herwig Steiner and Wolfgang Hammer
Distribution
Mahid Al-Saigh

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

Oil&Money

Abdalla Salem El-Badri, OPEC Secretary General.

Oil&Money 2015

Some light at the end of the tunnel

As delegates gathered for the annual Oil & Money conference in October, it was evident that events during the past year were at the centre of discussions. The industry had seen a great deal of volatility, with prices falling, many investments being deferred or cancelled, and manpower being laid off. Such events raised questions about how the oil industry could help bring more stability and balance back to the market.* The OPEC Bulletin *reports on the opening ministerial session where this particular question was to the fore.

The past year or so has clearly been a challenging one for all the industry's stakeholders.

After a number of years of relative stability, the period since July 2014 has been one of significant volatility.

This was obviously a key focus of discussions between Oil & Money speakers and delegates, with much of it centering on the many uncertainties the industry faces, the possible ways and means available to overcome them, and the potential impact of the past year's developments on the industry's future.

This was borne out in the overall theme of the conference: *'The Brave New World of Energy'*.

The opening ministerial session proved an apt scene setter. It was chaired by Nordine Ait-Laoussine, a former Algerian Minister of Energy and now President of Nalcosa, who was joined by a panel consisting of Abdalla Salem El-Badri, OPEC Secretary General, and Fatih Birol, the new Executive Director of the International Energy Agency (IEA).

The heads of both OPEC and the IEA offered their views on the current market situation, the challenges facing the industry, and the importance of the ever-evolving relationship between the two organizations.

The current situation

El-Badri said it was important to recall that over the past decades the global oil industry had gone through a number of cycles and changes, "some demand-driven, some supply-driven, some impacted by geopolitics."

These, he said, have required the industry to adapt and evolve. The current situation was another one of those cycles. Although he understood that the present environment was a challenge for everyone, he also felt some optimism for the outlook in the months and years ahead. "There is some light at the end of the tunnel," he stressed.

To support this statement, El-Badri noted that oil demand growth was healthy, non-OPEC supply growth was falling, and that expectations were for a much higher call on OPEC crude in 2016, compared with 2015.

Similarly, Birol also pointed to strong oil demand growth and a drop-off in non-OPEC supply growth.

The issue of non-OPEC supply, and specifically that of United States tight oil, was discussed in more detail in a later morning session by Mark Papa, Partner at Riverstone Holdings.

The opening session, chaired by Nordine Ait-Laoussine (r), President of Nalcosa, comprised panelists Abdalla Salem El-Badri (l), OPEC Secretary General, and Fatih Birol (c), the new Executive Director of the International Energy Agency (IEA).

Papa, former head of EOR Resources, one of the top US tight oil players, said, "we are about to see a very dramatic decline in US production growth," with significant consequences for the global oil market.

He stated that at $45/barrel for US benchmark West Texas Intermediate crude, he believed that no significant US domestic oil plays were economic on a full-cycle basis, with the decline in US output possibly pushing the price of oil up to around $75/b by the end of 2016. He added that this was a level that would see US production growing again.

Not the time to relax

Despite the ongoing rebalancing of supply and demand, both El-Badri and Birol stressed that now was not the time for the market to relax.

El-Badri pointed to the fact that "we have an overhang of 200 million [barrels] in the market." He said that all producers, OPEC and non-OPEC, should work together to look at how this overhang could be reduced. "If the situation right now is a problem for all of us, including the US, let us talk," El-Badri said.

He added that today's oversupply situation was not a consequence of OPEC's production, highlighting the fact that there has been an addition of "about six million barrels/day" of crude output by non-OPEC countries "over the past seven to eight years". In contrast, he said OPEC has kept its production fairly steady during this same period.

In this regard, it was interesting to hear comments from Birol. He said "the IEA is known to be the organization of consumers and OPEC is known for being the organization of producers. But when you look at the last five years, the output production growth from IEA members was five times higher than OPEC producers."

He also underscored the fact that due to lower prices, upstream investment in 2015 would be at least 20 per cent lower compared with 2014. This, Birol said, could have implications for future supply, adding that lower prices for a long time are not good for both producers and consumers.

El-Badri concurred, underscoring the fact that investment in 2015 is expected to be "cut by around $130 billion this year" from about $650bn in 2014. A possible outcome of this, he said, is less supply in the future, which could mean high prices. He highlighted that OPEC has always said it did "not want the two extremes — prices too high or prices too low."

Working together

While the market is seeing ongoing supply and demand rebalancing on a month-on-month basis, the comments from both El-Badri and Birol suggested a need to work together, where possible, in the interests of market stability.

El-Badri mentioned the possibility of OPEC and non-OPEC cooperation and both speakers underscored the importance of the continued positive dialogue between the respective organizations.

The OPEC Secretary General said he had recently invited Birol to Vienna, where they had held warm and constructive discussions. He noted that while "the IEA has security of supply as a goal and OPEC has security of demand, these two go together. It is important we work closely."

Adding to this, Birol mentioned the fact that many of the IEA's members were now emerging as large energy producers.

Although there is, indeed, 'some light at the end of the tunnel', it was clear from the comments of the two men that further work in advancing dialogue and cooperation could only prove beneficial — in making this light shine a little brighter.

Oil industry's best days still to come

— El-Badri tells Kuwait Oil and Gas Show

OPEC Secretary General, Abdalla Salem El-Badri, attended the annual Kuwait Oil and Gas Show and Conference in October, where he delivered a speech on 'Future Hydrocarbon Resources: Innovation, Technology and Opportunities'. In his address, he spoke about the challenges facing the industry, including a manpower shortage, the constant need for new technology and the continuing threat to under-investment as a consequence of lower crude oil prices. But he maintained that the oil industry's best days are yet to come.

OPEC Secretary General, Abdalla Salem El-Badri, has expressed confidence that the global petroleum industry's best days are yet to come.

Addressing delegates at the Kuwait Oil and Gas Show and Conference in Kuwait City, in October, he pointed out that the industry possessed an abundance of hydrocarbon resources, while oil and gas demand continued to grow.

"All of this points to tremendous opportunities," he told an executive plenary session on 'Future Hydrocarbon Resources: Innovation, Technology and Opportunities'.

El-Badri said that to turn existing and future challenges into promising opportunities, however, required strength, resilience and vision.

"And this means working towards more stability in the market," he maintained. "At OPEC, we are hopeful that the industry will see a more balanced oil market in 2016."

But he stressed that they should keep in mind the fundamental importance of ensuring that the people in the petroleum sector continually push for innovation and the development of new technologies that could help discover, extract, produce and supply more hydrocarbons in an ever more cost-effective and sustainable manner.

El-Badri said the three key themes of the session — 'Innovation, Technology and Opportunities' — were not only vital to developing the industry's future hydrocarbon reserves and other related activities, they had also been central to its past.

Looking back to 1960, he said, the year OPEC was founded, global crude oil production was just 21 million barrels/day.

"Today, it is around 75m b/d. This is an increase of over 250 per cent. On top of this, we also need to factor in the rise of other liquids, which currently add up to close to 18m b/d," he revealed.

Rise of natural gas

In terms of natural gas, El-Badri said production of this fuel was close to 445 billion standard cubic metres in 1960. "Today, it has risen to almost 3.6 trillion cu m. This is an increase of over 700 per cent."

He noted that this growth had been driven by innovation, human ingenuity and technology. They have helped to continually

"At OPEC, we are hopeful that the industry will see a more balanced oil market in 2016."

Abdalla Salem El-Badri, OPEC Secretary General.

transform and reinvent the industry by turning challenges into opportunities.

"For example, our industry has seen technological innovation move E&P opportunities from onshore to offshore, then to deep water and frontier regions, and most recently to unconventionals.

"We need to remember that many billions of people still rely on biomass for their basic needs and more than a billion still have no access to electricity." — El-Badri

"Improvements in the quantity and quality of information about different geological structures have meant we have been able to find more oil and gas."

When looking at recovery rates, El-Badri said technological developments had helped increase these from less than ten per cent of oil in place in the early history of the industry to more than 70 per cent in some fields today.

Advancements had also improved the safety of the industry; for those working in it, and also in terms of exploration, production and supply.

"And they have allowed us to continually improve the environmental credentials of oil and gas, both in production and use," he affirmed.

Looking ahead, the OPEC Secretary General told delegates that there was no doubt the world would need more energy in the decades to come as the global population expanded, economies grew, and countries sought to provide the energy poor with access to modern energy services.

"We need to remember that many billions of people still rely on biomass for their basic needs and more than a billion still have no access to electricity."

El-Badri said that to 2040, global energy demand was expected to expand by around 50 per cent.

"In this regard, all forms of energy will be needed — wind, solar, hydro, nuclear and, of course, fossil fuels, which will continue to play the major role in meeting demand. This growth will require some major investments," he declared.

In terms of oil, El-Badri said that with demand projected to grow to 110m b/d by 2040, oil-related investment requirements were estimated to be around $10tr between now and then.

"With all this in mind, let me stress that there is no doubt that the world has enough oil and energy resources to meet these expected future needs," he professed.

El-Badri said the most recent analysis for the remaining ultimately recoverable oil resources put the figure at 2.8tr b. And for natural gas, it was over 420tr cu m.

"It should be underscored that despite the continuing cumulative production, these numbers have increased over the past five decades," he explained. "Moreover, these numbers do not take into account the large amounts of available unconventional oil and gas resources."

El-Badri said the industry's past successes were a reminder that innovation and new technologies were key to unlocking the abundant sources of oil and energy in an ever more sound, secure and responsible manner.

"In the coming years and decades, the industry can expect to see additional new technologies shift perceptions and prospects once more."

This, said the OPEC Secretary General, would be achieved through such developments as carbon capture and storage, advancements in enhanced oil recovery and the development of new oil-based materials for various industry sectors.

"It all points to the simple facts that the industry's future will require more R&D; it will need more investment; and it will need more people.

The human element

"Here, allow me to focus on the most important element that will determine the industry's future: the human one. At its heart, the oil business is about people. All the innovation, technology and opportunities that are created in the industry depend to a great extent on the availability of talented and skilled people."

Unfortunately, said El-Badri, even before the recent cuts in manpower, the industry was experiencing critical shortages.

The reasons for this were varied. For one, there was a sizeable section of the industry's workforce now rapidly approaching retirement. At the same time, the dramatic expansion in the services industry and 'emerging knowledge' economies had led to a fierce competition for talent.

"And the enrollment of students in energy-related programmes continues to be a challenge. Globally, there is a shortage of young people entering the industry. It is vital that this is rectified," he maintained.

"It is the sustained support for the industry's scientists, engineers and visionaries — the people who create new ventures, new technologies and new techniques — that will drive our industry forward and expand supplies."

Delicate balance

El-Badri said one needed to appreciate that the development of future hydrocarbon resources was directly linked to the short, medium and long terms. None of these timeframes could be looked at in isolation.

"… it is essential to appreciate the delicate balance between prices, the cost of the marginal barrel and future supplies. This balance is vital in making sure the right enabling environment is in place and the necessary future investments are made," he stated.

"If the right signals are not forthcoming, there is the possibility that innovation will dry up, that technological breakthroughs will not materialize and that not enough new capacity and infrastructure will be in place in time to meet future rising demand levels.

"Yes, we need to keep our eyes firmly on the future, given the fact that oil is expected to be fundamental to the lives of many more people in the years ahead. But we also need to focus on the immediate challenges as the market searches for more stability during the current period of volatility.

El-Badri reiterated that stability was paramount. It was essential to have clarity in terms of the future of oil and energy — whether this was one, five, ten, or even 20 years ahead.

"It is quite clear that the past 16 months or so have been an extremely challenging time for the oil industry. Prices fell almost 60 per cent between June 2014 and January 2015, although we do not believe that actual market fundamentals warranted this huge drop.

"Prices this year have fluctuated mainly in the $40 to $60/b range. But again there has been significant volatility with the market seeing price spikes and falls that have been very loosely connected with changes in fundamentals."

El-Badri stressed that the oil market remained over-supplied and stock levels had risen above their five-year average.

"However, it should be noted that we have recently seen a contraction in production from some non-OPEC producers and an uptick in demand growth.

"… we need to keep our eyes firmly on the future, given the fact that oil is expected to be fundamental to the lives of many more people in the years ahead." — El-Badri

"Developments over the past year or so have led to a number of projects being cancelled or put on hold. Investment plans have been revised. Rig counts have fallen dramatically. And redundancies have being made."

El-Badri pointed out that these changes certainly offered up questions for the session: How might the current industry cycle impact the development of future hydrocarbon resources? And more specifically, what might this mean in terms of innovation, technology and opportunities?

"Some cost-cutting and efficiency measures will make the industry a little more nimble and agile. But with less investment, fewer project developments and reduced manpower on the scale that we have witnessed recently, the industry will no doubt be impacted in the short and medium term and potentially in the long term too.

"However … we need to keep investing. It is essential for our industry's future. It is essential to all those consumers around the world who rely on hydrocarbon resources for their everyday needs. And it will be essential to the future of those currently without access to modern energy services," he added.

We will have full coverage of the Kuwait Oil and Gas Show and Conference in the next issue of the *OPEC Bulletin.*

As world heads towards climate change talks in Paris …

CCS rises to the fore

As the countdown continues towards the COP21 environmental talks starting at the end of November, where global states will come together and look to broker a binding agreement on tackling climate change, the OPEC Bulletin reviews just how one innovative and very effective technology — carbon capture and storage (CCS) — could play a starring role in facilitating the transition to a decarbonized economy.

The statistics are startling! Energy carbon capture projects have prevented 10 million tons of harmful carbon dioxide (CO_2) from escaping into the atmosphere, according to the United States Department of Energy (DOI).

To put that into context — and in conservation terms — that is the combined weight of around two million African elephants.

And data from the International Energy Agency (IEA) suggests that CCS can play an integral role in decreasing carbon emissions by an impressive 20 per cent as it increasingly becomes one of the most cost-effective methods to do so. Achieving the same cuts without CCS will be far more expensive.

Presently, there are 14 large-scale CCS projects in operation worldwide, reports the Global Carbon Institute. These schemes are reported to have total CO_2 capture capacity of 27 million tonnes per annum.

Brad Page, the Institute's Chief Executive Officer, said: "With eight major CCS projects anticipated to go live in a range of industries worldwide by 2016, this low-carbon technology is reaching the critical mass necessary for widespread deployment."

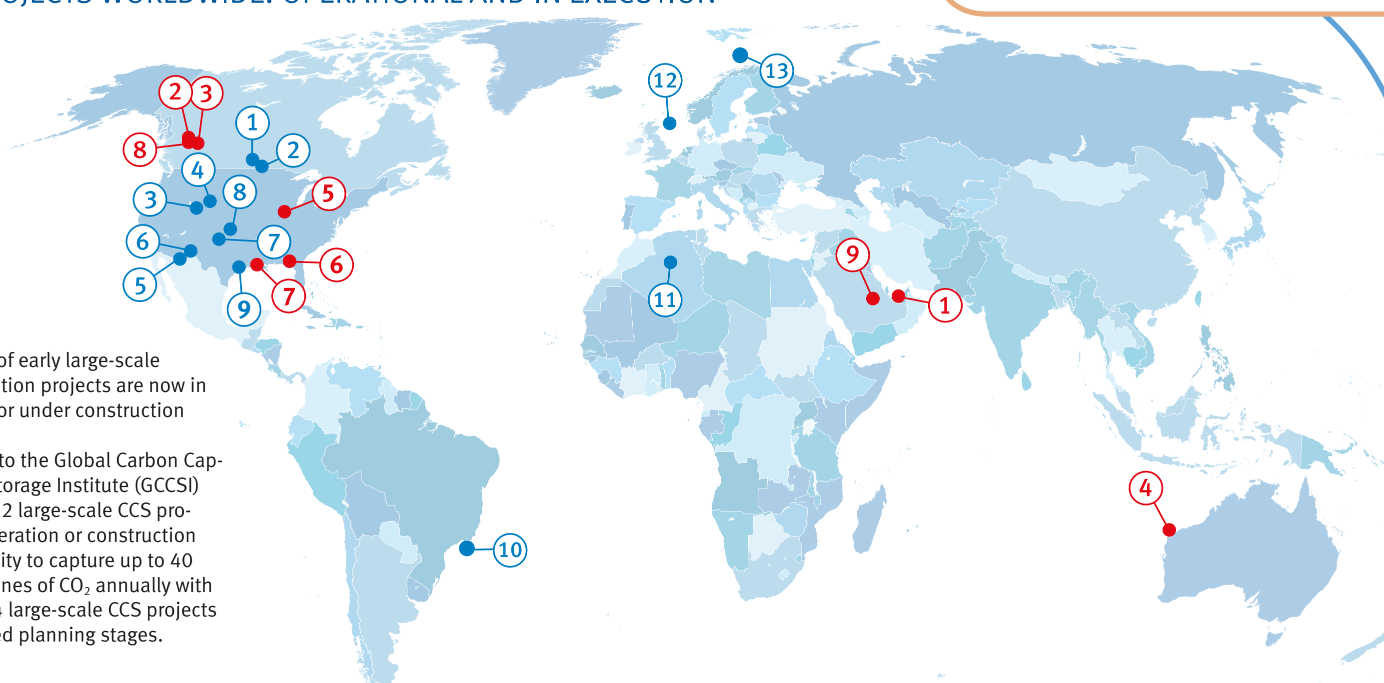
OPEC and its Member Countries recognize CCS as an important tool for combating climate change, whilst also offering the opportunity of supporting enhanced oil recovery (EOR) and minimizing gas flaring.

As the world's largest oil producing company, Saudi Aramco's summer announcement of the pilot Uthmaniyah CO_2-EOR project heralded a milestone.

Transporting 0.8m tonnes of CO_2 per annum from the Hawiyah gas recovery plant for use in EOR at the Ghawar oil field,

"Energy majors have called for a definitive framework on carbon pricing to "stimulate investments in the right low-carbon technologies and the right resources at the right pace."

CCS PROJECTS WORLDWIDE: OPERATIONAL AND IN EXECUTION



A number of early large-scale demonstration projects are now in operation or under construction globally.
According to the Global Carbon Capture and Storage Institute (GCCSI) there are 22 large-scale CCS projects in operation or construction with capacity to capture up to 40 million tonnes of CO_2 annually with another 14 large-scale CCS projects in advanced planning stages.

Image information courtesy of Global CCS Institute.

INDUSTRY KEY

SNG	Synthetic natural gas
PG	Power generation
NGP	Natural gas processing
FP	Fertiliser production
HP	Hydrogen production
ISP	Iron and steel production
OR	Oil refining
CP	Chemical production

PRIMARY STORAGE TYPE KEY

- Enhanced oil recovery
- Dedicated geological storage

OPERATIONAL PROJECTS

1	Great Plains & Weyburn-Midale	SNG
2	Boundary Dam	PG
3	Shute Creek	NGP
4	Lost Cabin	NGP
5	Century	NGP
6	Val Verde	NGP
7	Enid Fertilizer	FP
8	Coffeyville	FP
9	Air Products	HP
10	Lula	NGP
11	In Salah	NGP
12	Sleipner	NGP
13	Snøhvit	NGP

EXECUTE PROJECTS

1	Abu Dhabi	ISP
2	Alberta Carbon Trunk Line – Agrium	FP
3	ACTL –NorthWest Sturgeon	OR
4	Gorgon	NGP
5	Illinois	CP
6	Kemper County	PG
7	Petra Nova	PG
8	Quest	HP
9	Uthmaniyah	NGP

John Watson, CEO, Chevron.

oil-recovery rates are expected to improve by 10–15 per cent over the next 3–5 years.

Forging a \$70m, ten-year research partnership with Shell, Qatar is also investigating CCS technology via the Qatar Carbonates and Carbon Storage Research Centre.

Last July, the Qatar Fuel Additives Company launched a 500 tonne/day CO_2 recovery plant near the capital, Doha. to boost methanol production by 300 t/d.

Valuable experience was acquired in Algeria, another OPEC Member Country, through the onshore In Salah CO_2 Storage Project, but carbon injection was suspended in 2011 following concerns about the integrity of the seal.

Project partners, BP, Sonatrach, and Statoil injected 3.8m t of CO_2 1.9 km deep into the Krechba formation to learn how operations could be carried out in the US, Northwest Europe, and China where there is similar geology.

One of the key lessons learned was the "importance of flexibility in the design and operation of the capture, compression, and injection system," said the consortium.

Scheduled to start in 2016, the Abu Dhabi CCS Project involves transporting 0.8m t a year of CO_2 from the Emirates steel plant in Abu Dhabi to the Rumaitha oil field, operated by the Abu Dhabi National Oil Company (ADNOC), for EOR purposes.

In Venezuela, technical experts are exploring how CCS can utilize anthropogenic CO_2 as an alternative technology to conventional thermal methods for developing the Orinoco Oil Belt, according to the Global CCS Institute.

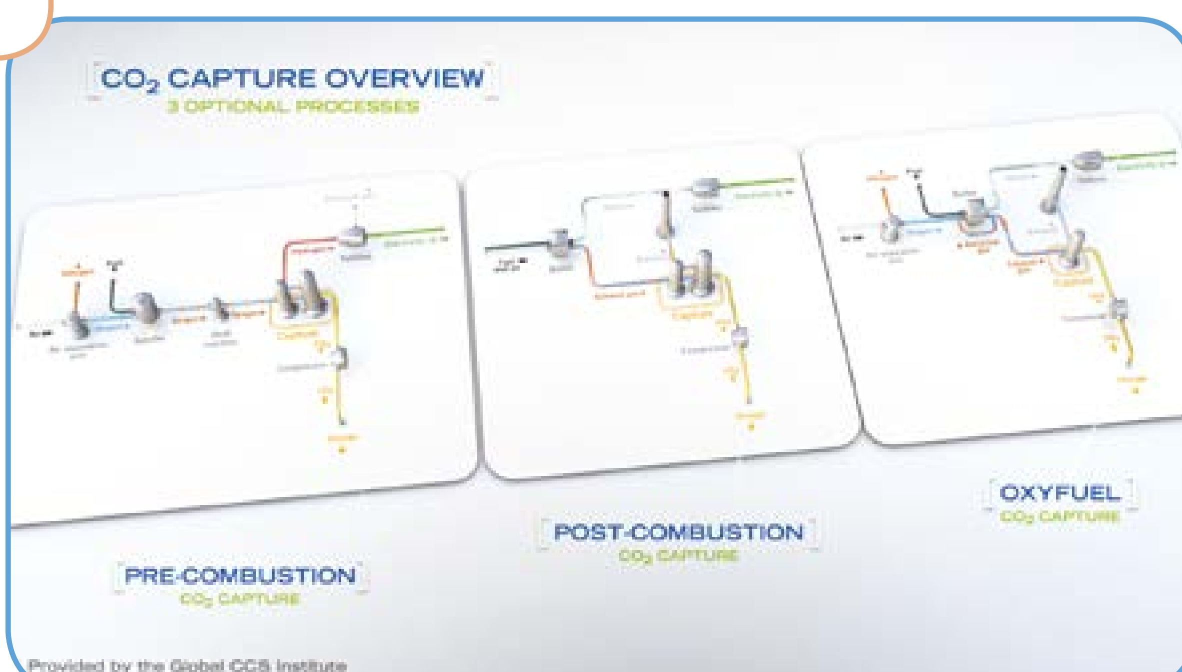
CCS barriers

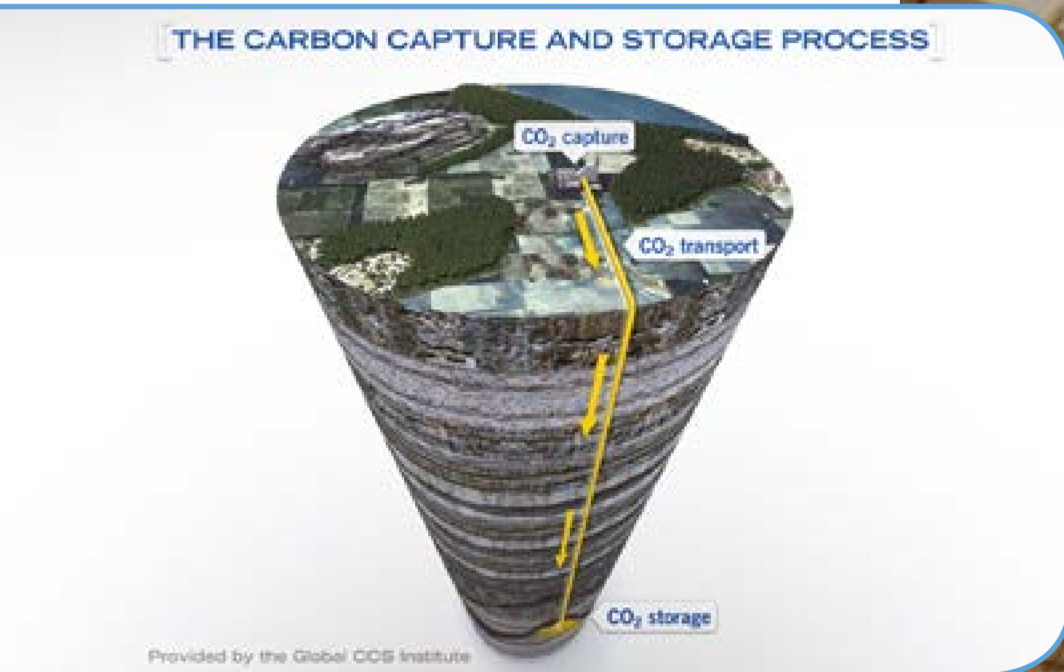
Despite CCS projects making some headway, the high costs of CCS technology, carbon pricing, political risk in negotiating climate change goals and public perception about safety raise questions about the viability of the utilization of CCS.

Demonstration projects and large-scale deployment are well behind the target of at least 30 projects by 2020, across many sectors, including coal- and gas-fired power generation, gas-processing, and hydrogen production for refining.

However, "the barriers to widespread CCS deployment

"The barriers to widespread CCS deployment can be overcome."



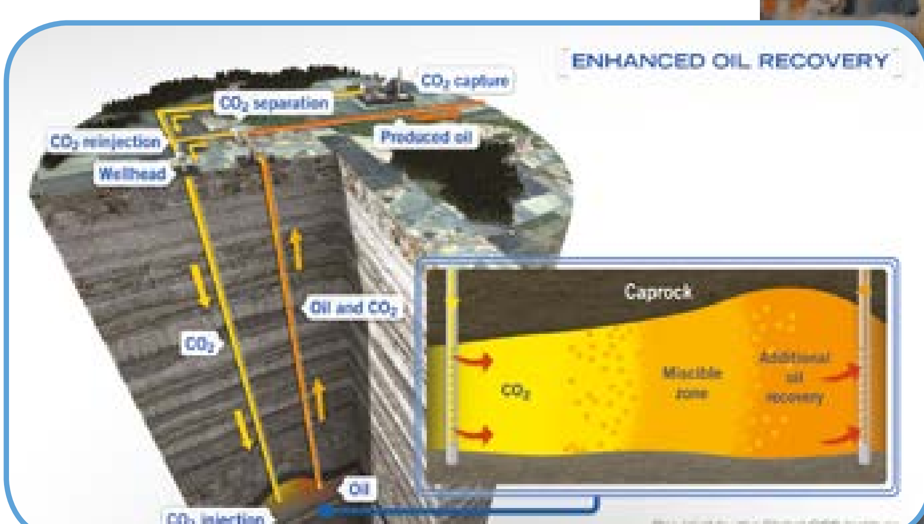


can be overcome," commented IPIECA, the global oil and gas industry association for environmental and social issues.

"Broader demonstration of CCS at scale will likely reduce implementation costs. As common infrastructure is installed and process configuration is optimized, cost reductions of around 30–50 per cent may be possible. Continued research and development should further lower costs and energy use, particularly in the capture stage," it maintained.

The North Sea and Baltic Seas in Europe hold vast geological potential to store carbon alongside the Middle East, the US and Central Canada.

However, public protests pose serious obstacles in delaying storage approval requests, or worse still having them cancelled altogether.



Pricing carbon

The voluntary Oil and Gas Climate Initiative (OGCI) — comprising the BG Group, BP, Eni, Pemex, Reliance Industries, Repsol, Saudi Aramco, Shell, Statoil and Total — has pledged to collaborate on CCS in a bid to limit the global average temperature rise to 2°C.

OGCI, which is responsible for almost ten per cent of the world's energy supply, said in October that some members were developing CCS projects in France, Canada, the UK and Mexico.

There is growing recognition that CCS cannot be mobilized without carbon pricing to ensure efficient use of fossil fuels.

Christine Lagarde, Managing Director of the IMF.

Christine Lagarde, Managing Director of the International Monetary Fund (IMF), has suggested introducing a tax on carbon emissions to raise revenues for finance ministers and to curb pollution.

> *"Investment in CO_2-EOR has a national return of up to 7.2x in the UK."*

Research from the New Climate Economy reveals that 40 countries and over 20 cities, states and regions have adopted or are planning explicit carbon prices, covering about 12 per cent of global greenhouse gas (GHG) emissions.

Indeed, in June this year, a coalition of energy majors called for a definitive framework on carbon pricing to "stimulate investments in the right low-carbon technologies and the right resources at the right pace."

Writing to the President of COP21 and the UN Framework Convention on Climate Change (UNFCCC), the companies — BP, Statoil, Total, Eni, and BG — said: "We firmly believe that carbon pricing will discourage high carbon options and reduce uncertainty that will help. We now need governments around the world to provide us with this framework and we believe our presence at the table will be helpful in designing an approach that will be both practical and deliverable."

Whether carbon pricing is an appropriate tool divides the petroleum industry as CCS adds a third or more to the cost of producing electricity in a gas-fired power plant.

"It is not a policy that is going to be effective because customers want affordable energy. They want low energy prices, not high energy prices," argued John Watson, CEO of Chevron, at the 6th OPEC International Seminar in Vienna in June.

Speaking last month to global insurers which hold up to one-third of their £2 trillion assets in carbon-related production industries, Mark Carney, Governor of the Bank of England, stressed that fossil fuel economics are now threatened by the move to cleaner fuels.

The world's carbon budget is about 1,000 gigatonnes of CO_2 from 2012 to 2050, which is the amount of CO_2 that could be emitted if global temperatures are to be limited to 2°C.

"That budget amounts to between a fifth and a third of the world's proven reserves of oil, gas and coal," said Carney. "If that estimate is even approximately correct it would render the vast majority of reserves 'stranded' — oil, gas and coal that will be literally unusable without expensive carbon capture technology, which itself alters fossil fuel economics."

And if the current emissions trajectory continues, within five years enough carbon would have been 'locked-in' to surpass the 2°C limit on global warming.

COP21 spotlight

Responsible for 40 per cent of carbon emissions, the energy industry has signalled that it welcomes the climate change negotiations in Paris where the international community will attempt to achieve a legally binding and universal agreement of keeping global warming below 2°C amidst strong warnings from environmentalists and the scientific community that this is the last window of opportunity to make a difference.

BP's Energy Outlook suggests that fossil fuels in 2035 will have an 81 per cent share of the energy mix — despite the shift towards lower carbon fuels.

So, how can growing global energy demand be met sustainably? Now the CCS community is amplifying efforts to promote the role the technology could play in mitigating the effects of global warming.

In another open letter to Christiana Figueres, Executive Secretary at the UNFCCC, 41 geoscientists and engineers outlined in October that research demonstrates that CCS is "secure and safe".

They called upon climate change negotiators to formally recognise how CCS could limit emissions in the COP21 discussions which will centre on action required beyond 2020.

Other major issues to be determined during the climate change talks are whether market mechanisms will drive international climate agreements, whether they will be linked, and whether offsetting will feature.

Environmental disapproval

Environmentalists, however, are strong critics of CCS, arguing that it is distracting from switching to cleaner fuels altogether.

"In the US, in particular, captured carbon dioxide is mostly used for EOR, leading to a net increase of emissions. An analysis published in April has shown how this can actually work as a perverse subsidy to the industry," said Iris Cheng, Energy Campaigner at Greenpeace International.

As the G7 committed earlier this year to shrinking GHG emissions by 40 per cent to 70 per cent by 2050, a multi-faceted strategy from the petroleum industry is required to produce sustainable energy: deploying CCS and other low-carbon technologies, improving energy efficiency, providing renewable energy, and expanding the share of gas in the energy mix.

The narrative is clear: the future of CCS hinges upon the right commercial and policy signals now for the energy sector to exercise CO_2 abatement, whilst delivering increasing energy supplies for the world's economic development.

Abdalla Salem El-Badri, OPEC Secretary General, who is fully supportive of CCS.

UK study confirms CO_2 for offshore EOR

With the United Kingdom pioneering carbon capture and storage (CCS) research, the latest findings bring some encouragement to the oil industry regarding extending the life of its UK Continental Shelf which is now one of the world's most expensive basins to operate in.

Analysis from the Scottish Carbon Capture and Storage (SCCS) group proposes that for the first time CO_2 could be used for EOR offshore in the North Sea — providing jobs, developing new export capabilities, and accelerating efforts to transition to a low-carbon economy.

Professor Stuart Haszeldine, who led on the research, told the *OPEC Bulletin:* "The UK ambition by 2050 is to reduce carbon emissions by at least 80 per cent and to do that at minimum cost, which is a huge challenge.

"Since the early 1970s, CO_2 has been used in EOR in the southern US. It is also used in Canada, Serbia, Hungary and in Turkey, so it can be done on land technologically, but it's never been done offshore."

He explained that the purpose of the study was to move forward the CCS debate by creating a market for the CO_2 produced from the process.

"To fit CCS onto a power station burning gas or coal could produce 1–5 million tonnes of CO_2 per year, which you then have to pay to transport and store it. But it is clear from EOR that using the CO_2 can make extra value by producing additional oil that would otherwise stay in the ground."

Production of oil from a North Sea oilfield typically leaves 55 per cent of the oil underground. Investment in CO_2-EOR has a national return of up to 7.2x, which is much larger than rival energy opportunities, the report said.

The national economy of Saudi Arabia has been growing rapidly over the years. In fact, it has led to the OPEC Member Country being one of the richest nations in the world. And even though the slump in international crude oil prices over the past year has led to the Kingdom rationalizing some of its spending plans, it is largely a case of full-steam ahead in pursuit of its ambitious development programmes. ***Ayman Almusallam****, a Saudi national, who is working as an intern at the OPEC Secretariat in Vienna, reports for the* OPEC Bulletin *on his country's past and present performance … and its very promising future.*

The Saudi economy

Past, present … and future

The Kingdom of Saudi Arabia will continue to invest in its oil and gas sector, regardless of today's declining crude oil prices. That is the firm message relayed by Ali I Naimi, the Gulf nation's longstanding Minister of Petroleum and Mineral Resources.

But apart from the Kingdom continuing to develop its vast petroleum resources, moulding its operations to the country's growing domestic needs, the Minister also stresses the importance of developing renewable energy sources, particularly solar energy.

Naimi says he is confident the international oil market, currently suffering from over-supply and low prices, will recover. He is also adamant that fossil fuels will remain the main source of energy for decades to come.

His comments on Saudi Arabia's operational outlook have been supported by Ibrahim Al-Assaf, Minister of Finance, who also affirms that, despite the "challenging" conditions seen today, the Kingdom will carry on with its spending scheme in 2015, targeting the pursuit of development projects and social benefit programmes.

He was quoted by the Saudi Press Agency (SPA) as saying that the Kingdom's "counter-cyclical" fiscal policy, which helped build net foreign assets of $734 billion when oil prices were high in the last few years, would continue in the 2015 budget and beyond.

"This policy … will enable the government to continue carrying out massive development projects and spending on development programmes, particularly in the sectors of health, education and social services," he added.

Saudi Arabia's economic performance in recent years has been quite outstanding. In virtually all areas of the economy one sees growth. For example, so far in the current decade the Kingdom's gross domestic product (GDP) has risen from $526.8bn in 2010 to more than $752.4bn in 2014, according to OPEC data.

And it is crude oil that has played such a key role in boosting the Kingdom's national income and supporting the expansion of its economy.

In fact, Saudi Arabia's petroleum sector currently accounts for almost 76.6 per cent of the Kingdom's total gross exports.

According to the *OPEC Annual Statistical Bulletin (ASB),* Saudi Arabia's petroleum exports in 2014 amounted to a value of $285.1bn, compared with $214.9bn in 2010.

This was out of total exports in 2014 worth more than $372.8bn. In 2010, the corresponding figure stood at $251.1bn.

Similarly, the Kingdom's imports have also risen in value, in tandem with its development. In 2010, they cost Saudi Arabia $106.9bn. This figure rose to $179.4bn in 2014.

It meant that, in 2014, Saudi Arabia recorded a current account surplus of $109.3bn, compared with $66.7bn in 2010.

Growth and development

The Kingdom's petroleum worth is vast. Its proven crude oil reserves amounted to 266.6bn barrels in 2014, second in the world only to fellow OPEC Member Country, Venezuela, which possesses almost 300bn b.

In tandem with its impressive economic growth and development, Saudi Arabia's population has also been growing in successive years. In 2010, the figure stood at 27.6 million. By 2014, the Kingdom was said to have 30.8m inhabitants. This is over a surface area of 2.15m square km.

GDP per capita amounted to $24,454 in 2014. And according to the CIA World Fact Book, life expectancy at birth in Saudi Arabia has now reached 75 years.

Looking back over its startling growth, Saudi Arabia underwent significant changes in the economic domain between 1970 and the 1980s. Its oil exports increased notably as a result of growing demand which triggered a tremendous upsurge in returns and revenues.

Figures show that the Kingdom's oil turnover increased from $2.1bn in 1970 to $111.1bn in 1981. The national GDP in 1970 stood at around $5bn. By 1981, it had grown exponentially to $183bn.

Ambitious development plans

As of 1970, Saudi Arabia completed three five-year development plans that emphasized social development. This included, but was not limited to, developing the Kingdom's social services, housing, schooling, academia, infrastructure, hospitals and clinics, roads and motorways, in addition to farms, refineries and cities.

The prospects for Saudi Arabia in the future promise to be equally as prosperous since demand for conventional quality fossil fuels is expected to grow considerably in the years ahead, particularly in Asia and the developing world.

Over the years, the Kingdom's continuing success in finding valuable oil reservoirs, coupled with the technological advancements seen that have made exploiting more difficult petroleum resources possible, endows the nation with the ability to operate the world's largest oil production capacity.

This more than adequate supply, coupled with an ability to increase its output capacity over a short period of time, which very few producers today can achieve, places it in the foremost position worldwide in helping to meet the forecast rise in global oil demand in the future.

At the same time, Saudi Arabia, in recent years, has shown an increasing commitment to diversify its petroleum sector and oil production through developing a new strategy that aims to transform the nation's role in the industry from a regular oil supplier to a supplier of high-quality refined petroleum products.

In this way, the Kingdom is undertaking the responsibility of refining sour and heavy oil prior to exporting the refined products. This is instead of exporting the raw crude to specialised refineries located in a few countries only.

This new approach assists the Kingdom in broadening the range of potential customers.

A breakdown of the Saudi aggregated GDP in 2000 and 2014 reveals the significant reliance of the national economy on the industrial sector and services. The industrial sector experienced notable growth in 2014.

Concerning inflation, in 2000, Saudi Arabia experienced a deflation in consumer prices by a rate of –1.13 per cent roughly. However, a contradicting scenario occurred in 2007 as the inflation rate reached 4.2 per cent. By 2014, it stood at 2.7 per cent.

According to the World Bank, the Kingdom has been experiencing increases in inflation rates since 2002.

And looking at levels of employment, which represent a social factor influencing a national economy, unemployment in Saudi Arabia stood at 4.6 per cent in 2000 and increased to 5.7 per cent in 2007. By 2013, World Bank figures had it pegged at 5.6 per cent.

Despite the fact that Saudi Arabia considers economic growth as a priority and key objective, it has paid significant attention and extraordinary commitment to its economic development.

The United Nations Development Programme (UNDP) has described the Kingdom as a nation that undertakes notable human developments and maintains advancement. The Kingdom was ranked 34 on the international benchmark of the Human Development Index (HDI) in 2013.

Trade

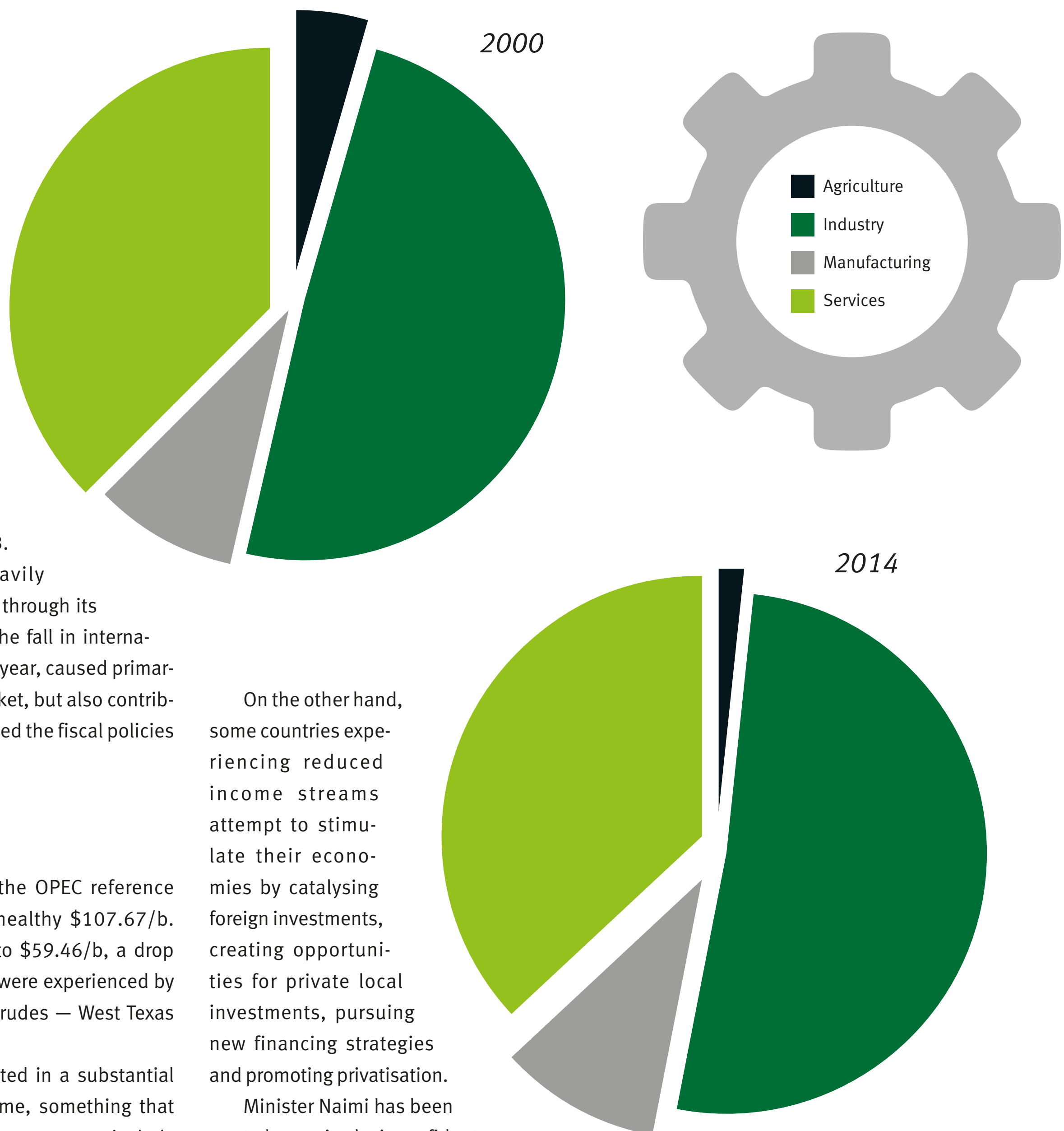
Exports have been one of the most critical industries for the Kingdom over the years of its development. According to the World Bank, some 47.5 per cent of Saudi Arabia's GDP was exported in 2014, which signifies the tremendous increase in the importance of the sector, especially over the past two decades.

In 1994, it was estimated that 34.2 per cent of the Kingdom's GDP was exported to foreign economies. The former figure reveals a notable change in the national economy, particularly on the country's income.

Notwithstanding the extensive amount of exports made by Saudi Arabia to foreign economies, the Kingdom's range of products and services that can be exported is rather narrow. As one would expect, a notable share of Saudi exports is made up of oil and petroleum products.

Regarding imports, Saudi Arabia has experienced significant, rapid expansion in this sector. In fact, the

Breakdown of the Saudi GDP by sectors



Source: The World Bank, 2015.

import sector has almost tripled in size over the last ten years, a continuous trend that was only hindered slightly in 2009 during the global financial crisis and recession.

Figures show that from 2005 to 2014, imports grew at an estimated rate of 191.15 per cent. And in 2014 alone, they expanded by 11 per cent over 2013.

With Saudi Arabia still heavily dependent on revenues generated through its oil and petroleum product trade, the fall in international crude oil prices over the past year, caused primarily by excessive supplies in the market, but also contributed to by speculation, has influenced the fiscal policies of the Kingdom.

Oil price decline

In December 2013, the price of the OPEC reference basket of 12 crudes stood at a healthy $107.67/b. Twelve months later it had fallen to $59.46/b, a drop of almost 45 per cent. Similar falls were experienced by the two international benchmark crudes — West Texas Intermediate and North Sea Brent.

The oil price decline has resulted in a substantial loss in revenue streams and income, something that can trigger consequences for any country, particularly nations that rely heavily on fossil fuels as a main source of finance.

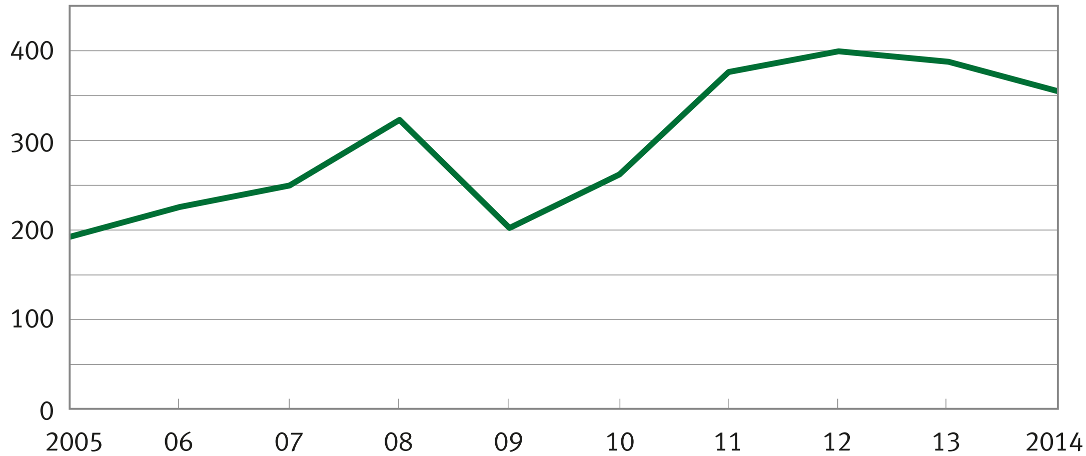
Such a decrease in national income characteristically forces countries to rework their budgets, impose spending cuts, investigate potential project postponements, attempt funding reductions, examine taxation policies and, in some cases, depending on the severity of the income shrinkage, reformulate the structure of their economies.

On the other hand, some countries experiencing reduced income streams attempt to stimulate their economies by catalysing foreign investments, creating opportunities for private local investments, pursuing new financing strategies and promoting privatisation.

Minister Naimi has been quoted as saying he is confident that economic producers, like Saudi Arabia, will continue to prevail in the oil market in the long term.

In response to the current market situation, the Kingdom has undertaken several key economic strategies, in order to enhance national income, maintain financial stability, minimise the budget deficit and fund necessary and critical projects and investments across the nation.

Total volumes of Saudi exports *($ bn)*



Source: The World Bank, 2015.

Economic diversification

Even before the oil price decline, Saudi Arabia expressed a strong intention to diversify its national economy, expand its revenue streams and enhance its income.

This has been designated as the primary objective of recent economic strategies, whilst further developing the Kingdom's petroleum sector.

According to experts, diversification of a country's economic activity is a significant and effective instrument for overcoming challenges such as the world is facing today, yet such an approach requires long lead times before positive results are realized.

Furthermore, Saudi Arabia has attempted to stimulate the market through the adjustment of national laws enabling international foreign corporations to enter the Kingdom as public-limited companies, allowing their shares to be traded legally on the Saudi stock market.

Additionally, Saudi authorities have eliminated restrictions imposed on ownership regulations for non-nationals, resulting in foreign investors being able to possess shares in companies operating in Saudi Arabia with up to 100 per cent of tradable stock.

According to the *Alriyadh* newspaper, the above-discussed strategy is expected to attract notable foreign investments amounting to a minimum of 150bn riyals ($40bn).

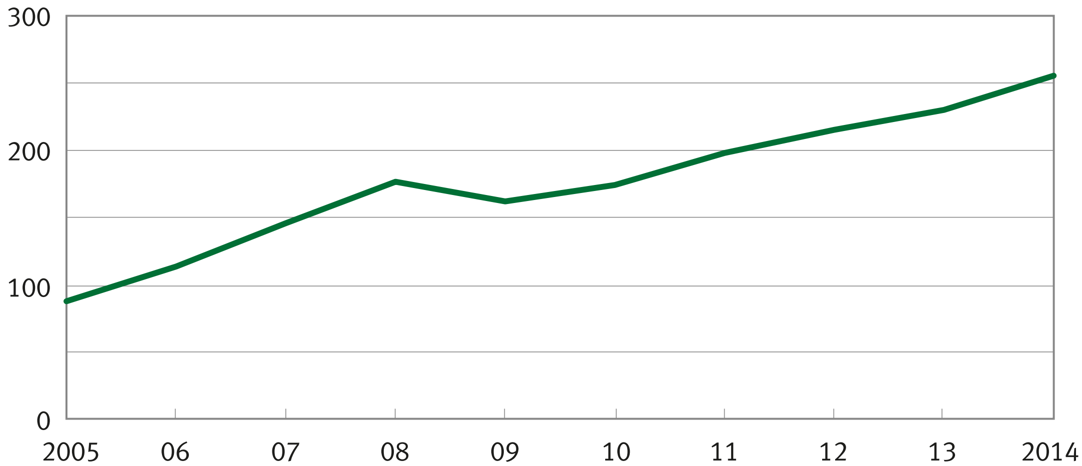
However, Saudi Arabia is also protected by a considerable economic cushion. Over the years, the Kingdom has amassed immense financial reserves that have been retained and maintained, in order to be utilized during times of difficulty and significant need.

According to the International Monetary Fund, Saudi international monetary reserves were estimated to be worth around $662bn in 2015. These are savings that can potentially be used and invested for upholding and developing the economy during challenging circumstances.

Saudi authorities are also looking to sovereign bonds for assistance. This facility is one of the most effective financing instruments nations turn to when additional money is required.

Throughout 2015, the Kingdom has issued a considerable number of government bonds, equalling a

Total volumes of Saudi imports *($ bn)*



Source: The World Bank, 2015.

total value of 35bn riyals ($9bn). These have been designated to be sold to local commercial banks and public establishments, according to *Alriyadh*. The specified time period for compensation is five to seven years. The creation of the state bonds occurred in two rounds.

Issuing of state bonds

It is felt that Saudi Arabia can overcome the decrease in oil returns through stimulating the market further and issuing state bonds, as local commercial banks possess the financial capability to purchase them, mentioned *Alriyadh*.

The most recent strategy that has been undertaken by Saudi Arabia is to reduce the Kingdom's investments in foreign markets.

However, despite the present situation a look at the GDP figures confirms that Saudi Arabia is still one of the richest countries in the world.

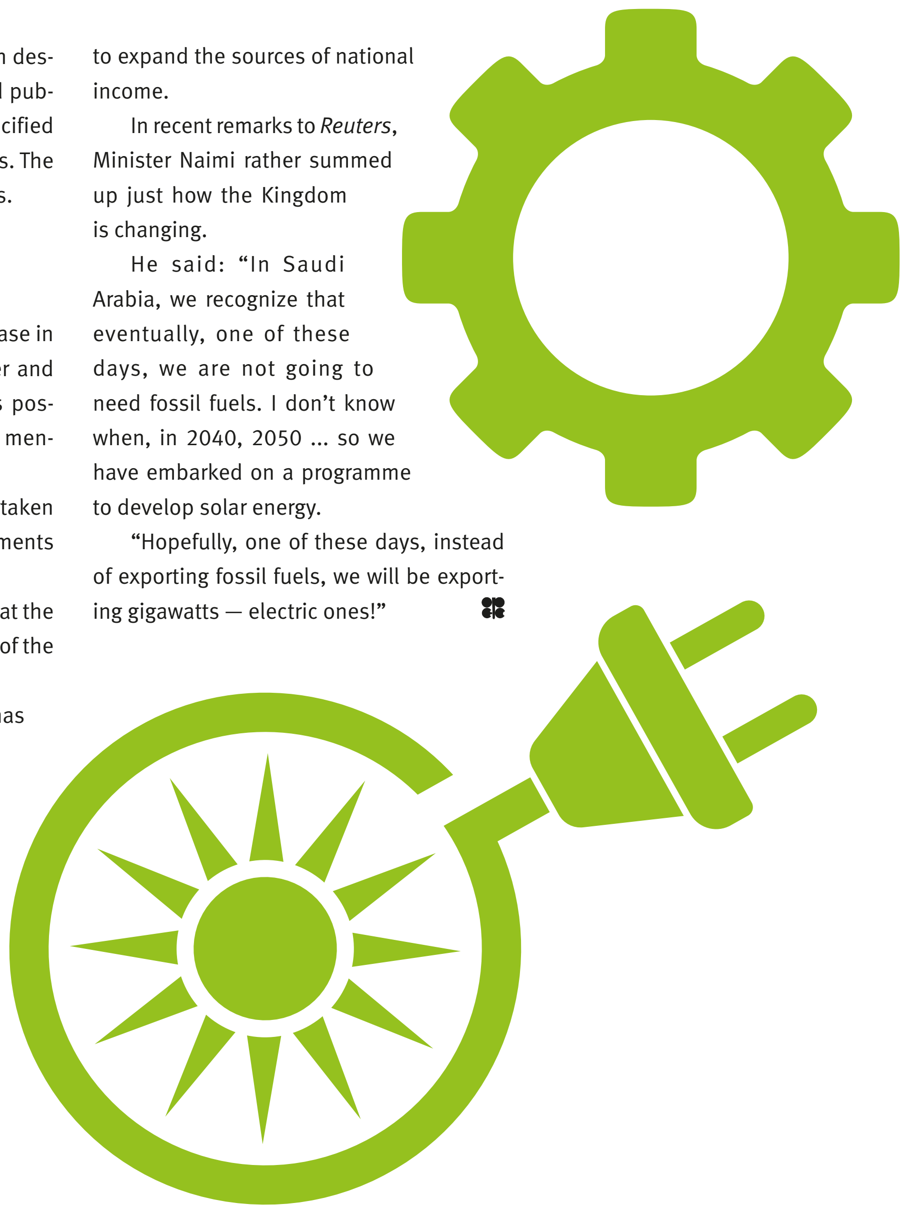
There is no doubt that the drop in oil prices has affected the Kingdom's financial position, leading to a notable budget deficit by the end of 2015, but it is taking steps to counteract the situation.

However, analysts and experts agree that a long-term strategy is perhaps required, along with the promotion of the diversification of the Saudi economy, including developing several new revenue streams, in order to expand the sources of national income.

In recent remarks to *Reuters*, Minister Naimi rather summed up just how the Kingdom is changing.

He said: "In Saudi Arabia, we recognize that eventually, one of these days, we are not going to need fossil fuels. I don't know when, in 2040, 2050 ... so we have embarked on a programme to develop solar energy.

"Hopefully, one of these days, instead of exporting fossil fuels, we will be exporting gigawatts — electric ones!"



Montan University celebrates 175 years of excellence

Building on the past, moving to the future

It's not easy at the top. The professors and students of Austria's Montanuniversität (Montan University) are aware of that … and things are not getting any easier after 175 years. Just as the oil and gas industry is having to change to meet the 21st century's increasingly stringent demands and conditions, then so is this world-renowned institute in its approach to top-level education. The OPEC Bulletin's, ***Maureen MacNeill****, recently visited Montan to attend a landmark ceremony, where she learned more about its prestigious petroleum programmes and longstanding links with OPEC.*

The impressive Montan University — renowned the world over.

With calls of *Glückauf!* ringing through the halls of Montan University in Leoben — a small, picturesque town in the Austrian countryside — former graduates, current students and faculty greet each other during the 175th anniversary celebration of the institute. The term was originally used by miners to wish one another luck in coming safely back to the surface after submerging into the dark and gloomy bowels of the earth to do their job.

But on this day, there is only great cheer and a lot of pride — and rightly so. The university, which has longtime links to both OPEC and the oil industry, has reached a milestone, and done so in style.

Among its various programmes, its oil- and gas-related degrees have become well known around the world, and its graduates sought after.

"Abroad, where I am on a lot of official visits, talking about the possibilities of offering Austrian knowhow, scientific achievements and services, Montan University Leoben (MUL) and its achievements play a big role," says Austrian President Heinz Fischer via a filmed message to the assembled crowd. "It is no coincidence that there are a lot of students from abroad."

With a procession of horns and a shout like those of a crier in an old town square, the festivities start with the advancement of sword carriers and then dignitaries from all parts of academia, politics, civil society and industry and from many parts of the world. They enter the packed room in the full regalia of their own achievements. Former graduates sit in the audience, in traditional Austrian dress with gold buttons which have a significance of their own.

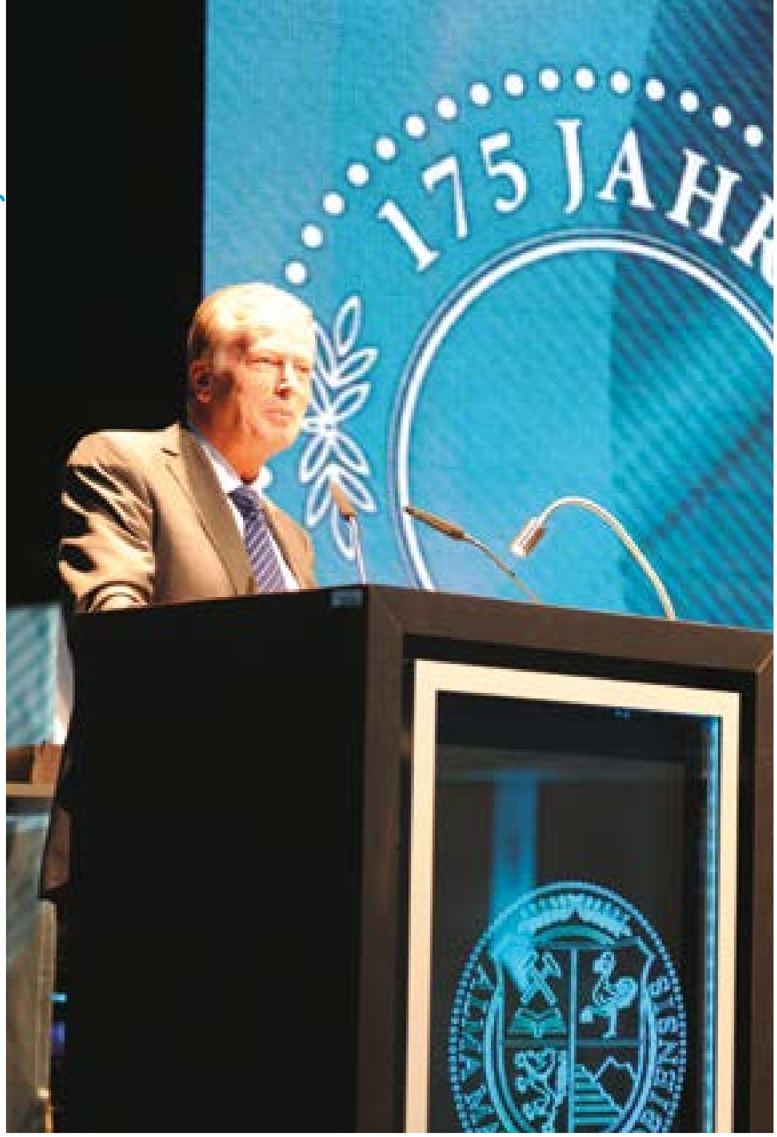
Education as a resource

Vice-Chancellor of Austria and Federal Minister of Science and Economy, Reinhold Mitterlehner, states: "Education is the most important resource for the future and with these two components (resources and their sustainable management and human capital) the then Steiermärkisch-Ständische Montanlehranstalt has laid the foundation for a future-oriented development and Montan University Leoben's world fame of today.

"I want to mention the strategy for industry leaders and flagship enterprises. We have identified many fields and measures that the economy needs. One topic mentioned is the necessary new approach to shale gas extraction. You know the problems of fracking … we need environmentally friendly measures. Professor Hofstätter and his team achieved — at least in the laboratory — the development of a kind of bio-fracking; one without the application of chemicals.

"I think this could become a success," he affirms.

Mitterlehner adds that student numbers at the institution have doubled over the past ten years — from 2,000



Reinhold Mitterlehner, Vice-Chancellor of Austria and Federal Minister of Science and Economy.

Professor Herbert Hofstätter, petroleum expert at Montan University.

to 4,000 — and in the next six years the plan is to reach 5,000. He says the university has applied three important components that have aided in its success: the creation of a profile of core competencies; internationalization; and cooperation in the form of partnerships.

In fact, MUL last year became the beneficiary of a $13.5 million per year initiative with OMV, Austria's state oil and gas producer. The initiative has helped the university double its investment in oil and gas-related research and teaching, as well as establish an International Petroleum Academy.

"In the present, Leoben is famous not only in Austria, but in the whole world, represented through the students of this university," says Waltraud Klasnic, governor and chairwoman of the university counsel. "The alumni feel very connected to their alma mater — they recognize each other around the world and are proud to say 'we are Montanistin from Leoben'.

"I want to thank all the teachers and employees of the university for sharing and transferring their talents and knowledge, with which they also shape the future … Montan University is one of the best technical universities in the world. And this we can say with pride because of the feedback we get from the outside world."

The university certainly has come a long way from its humble beginnings in 1940 with nine students and one professor to today's world-famous university with over 4,000 students from more than 80 countries, states Wolfgang Eder, the CEO of voestalpine AG (the voestalpine Group is an Austrian steel-based technology and capital goods group that operates worldwide. It is also one of the leading partners to the automotive and consumer goods industries in Europe and to the oil and gas industries worldwide).

"Montan University today is a teaching and research institute whose scope goes far beyond the initial objectives. It has become what we in the industry need because what we get from the university are people with a wide knowledge base, young, engaged, highly motivated and excellently educated academics in those technical fields that are decisive for our future."

The Mayor of Leoben, Kurt Wallner, says the university and city have a long-lasting symbiosis. "For Leoben, the (university) is a renowned flagship, attracting many young, dynamic people from all over the world who shape our city. Big companies appreciate Leoben as a university location, as they also benefit from new scientific findings in their respective areas; company headquarters are even moved to Leoben."

The city has always been very supportive of the institution and presented a gift of two buildings close to the campus, as well as a grant of €300,000.

"The (university) is also an important cultural body, with all the students' customs and traditions, which also shapes the city's cultural development. Through contact with the many students from abroad and their different cultures, Leoben has become a dynamic and cosmopolitan centre in Upper Styria, which is especially important in times like now," maintains Wallner.

Leoben has 25,000 inhabitants; staff and students together number more than one-fifth of the city's population.

Christopher Drexler, Styrian Provincial Minister for Health, Care, Science and Personnel, says in his words of greeting: "Obviously, already in the first half of the 19th century people noted that the hard work of strong hands alone will not be enough to create iron. It needs a sharp mind and scientific expertise.

"It is not every day that a relatively small university reaches importance worldwide, like the Leoben Montan University, and it should stay that way. It is important for Styria and also through a new research centre at Erzberg, a first in Europe."

Regional governor representative, Michael Schickhofer, adds: "Montan University Leoben is a power plant of knowledge and innovation where research becomes the future. It is the future for tens of thousands of young people, who in the last 175 years took from (the university) knowledge, implementation skills, and values like open-mindedness and discipline."

Professor Herbert Hofstätter, petroleum expert at the university, explains that another secret to the university's success is a ratio between students and teachers of about 1:7 "which is an excellent figure and allows for direct contact to all students. Another important issue is the well-founded education in the fundamentals of science and engineering as part of our educational programme, which allows the graduates to be highly flexible in terms of job selection. From scientists to CEOs, even in totally different industries, Leoben alumnis are present."

Anton Zeilinger, President of the Austrian Academy of Sciences, considers the environment required for proper research: "The search for scientific truth requires freedom, in order to find what is unexpected and therefore highly important.

"This is also highly relevant, since more and more voices from the scientific community are raised fearing that the focus on international grants, publication in international magazines, marketing and similar issues could result in a realignment of science. This would be problematic."

He states that the idea of academic freedom defining the modern university has two important roots. First, the German contribution through the Himboldtian University at the beginning of the 19th century, which supported the idea that "the professor … is independent in his search of the truth". The second comes from the foundation of academies in different countries, especially in the Anglo-Saxon region.

Once you do things for money, it poses a lot of risk, says Zeilinger. "You offer courses not because of educational needs anymore, but because you can make a profit. It is also in the interest of applied research in the long run to underline quality and define it as a primary objective."

He adds that the Academy of Sciences has supported activities at the university in the form of the Erich Schmied Institute, founded in 1971 and dedicated to the material sciences. "I think it is not too bold to say that many of the university's activities in the material sciences trace back to the foundation of this institute."

Former OMV chief, Helmut Langanger.

History of the university

The university's rector, Wilfried Eichlseder, talked to the *OPEC Bulletin* about the institution's past. He said industry started in the region in the 19th century and it was necessary to have educated people on the one hand and research activities on the other for mining and metallurgy.

This was one of the reasons for founding the Montan University, says Eichlseder. The second reason was a political one. Originally the education of miners was undertaken at the Imperial Royal Mining Academy in Hungary, which at the time was inside the Austro-Hungarian Empire. The 1948 revolution brought with it radical political changes that made it impossible for Austrian students to visit the academy.

"… the German-speaking people were not allowed to study there, so they needed something here in the German-speaking part."

At first, the university was more of a polytechnic; it was moved from the nearby town of Vordernberg to Leoben during the revolution because Leoben was larger. In 1904, the university gained the right to endow a doctor's title.

"Petroleum engineering was introduced in the 1950s or 1960s. There were only two (facilities for the subject) in the German-speaking world at the time, both in Germany.

"Today, petroleum engineering is in English starting in the fifth semester, which has been a big draw for foreign students. The university's 16 per cent foreign student population hails from 80 nations. Many, but not all, are in petroleum engineering."

Dignitaries from all parts of academia, politics, civil society and industry and from many parts of the world attended the landmark ceremony in Leoben.

"In the middle of the 20th century they recognized that only raw materials were not enough and they needed to enhance the value-added chain of raw materials towards materials, metals, steels, ceramics and polymers," notes Eichlseder.

"At the time of its foundation, the teaching areas were mining and metallurgy, but new studies have been introduced since the middle of the 20th century: petroleum engineering, material science, polymer engineering and science, mechanical engineering, industrial environmental protection, applied geosciences, industrial logistics, industrial energy technology, and in the last academic year, recycling.

Eichlseder points out that students find out about the university through word of mouth, or because of its reputation.

"OMV does a lot of advertisement for us. They know all the locals in the Arabic-speaking countries and send them to us."

A new learning centre for petroleum engineering is in the process of being created, states Eichlseder. "The building is already being prepared accordingly."

He maintains that a main reason for the university's success is that it stays focused. Its main studies follow a circle of raw material to raw material, with the cycle coming full circle with the introduction last year of a study in recycling. Some of the materials developed at MUL are used in the oil and gas industry today, in areas such as drilling and fracking.

Eichlseder also spoke about 'innovation from tradition' which he interprets to mean the transfer of scientific results to industrial application. "We have a very close connection to industry. Our budget is coming 35 per cent from industry. That's a very high percentage — the highest in Austria."

Over 550 employees are funded through third-party resources of a total staff number of 1,300. In total, more than 400 research partners cooperate with MUL.

In addition, many professors at the university are coming from industry. "In my case I was in the automotive industry for 20 years. I'm a mechanical engineer.

"MUL alumni have excellent job prospects and can be found in responsible positions worldwide," states Eichlseder.

Petroleum engineering and OPEC

Of the various studies offered at the university, about 30 per cent of them are in direct relation to petroleum engineering, states Hofstätter.

"Some 60 per cent of the programmes are related to the oil and gas industry," he adds, stating that the oil industry would not exist if there was no input from material sciences, environmental engineering, energy efficiency, etc.

"Lots of our alumni from the various disciplines are indirectly involved in the oil and gas industry," he informs.

The university has traditionally had strong relationships with partner universities on all continents of the globe, continues Hofstätter.

"Our strong commitment to internationalization started in 1991 with the changing of our programme to the English language and the building of very successful partnerships with universities all over the world."

Of all the faculties, petroleum engineering leads in the number of foreign students it hosts at 30 per cent.

In addition, the university's alumni have a very close connection to OPEC, says Hofstätter. "Lots of graduates are in top management positions in OPEC Countries. One of our graduates became Petroleum Minister of Angola and Deputy Secretary General.

"Every student is aware of OPEC. Every year, numerous new students join MUL from OPEC Countries and this has been happening for decades now.

"When I was a student in the late 1970s, the Saudi Arabian Petroleum Minister, Ahmed Zaki Yamani (who played an important role in OPEC's development), came to visit Leoben. I think this really started the cooperation and mutual awareness. He also earned a PhD honoris causa from our university."

University rector, Wilfried Eichlseder.

Outstanding alumni

Among the great graduates of the university are Dr Rilwanu Lukman of Nigeria, who held a Certificate in Mining and Mineral Exploration from MUL (1967–68). Lukman was one of the oil industry's most influential and respected ambassadors and personalities. He died in July 2014 in Vienna, after serving a distinguished career as one of the longest-serving heads of both the Nigerian oil industry and OPEC; a career that spanned five decades.

"He was widely recognized and highly regarded in the global petroleum industry; a loyal and dedicated man, who had the best interests of Nigeria and OPEC at heart," according to an OPEC Bulletin published shortly after his death.

In paying tribute to the oil elder statesman, it said that during his career he held various high-level tenures, such as Petroleum Resources Minister and Presidential Adviser on Petroleum and Energy, as well as OPEC Secretary General and OPEC Conference President.

A former head of the National Iranian Drilling Company

Anton Zeilinger, President of the Austrian Academy of Sciences.

(NIDC), Hossein Golpayegani, is also an alumni of the university.

Other famous alumni include former OMV chief, Helmut Langanger, who was in Leoben for the celebration. "I am a friend of (OPEC Secretary General) El-Badri," he states. He was in Libya starting in 1983 and El-Badri was the then Chairman of the National Oil Company. "We signed the first major contract for OMV."

When Langanger started at MUL in 1968, there were about 100 new students in PE and at least 25–30 of them were from Iran. There were also many from Iraq, Syria and Egypt, and the first started arriving from Norway.

"There were many colleagues from Iran and Iraq,"

Montan chocolates ... marking the university's 'sweet' success.

he says. "I used to be many times in Iran and Iraq and it happened to me many times that I came across people who were student mates and hugged and said: 'I haven't seen you in 20 years!' We were once pursing a project in Baghdad and had a dinner meeting at a very nice restaurant. Two people came in and they were my student mates!"

Langanger studied PE at the university until 1973. "It was very exciting. I saw a movie with John Wayne and firefighters and so and it enticed me to study here. Afterwards I joined OMV."

Starting out as a young junior engineer, "I learned everything from scratch. After a while, in 1980, OMV started on a larger scale with international activities. We did engagement in Libya first, then many others, the UK, Pakistan, Malaysia, Indonesia, Gabon, Angola — you name it."

In 1989, Langanger became senior VP for international and domestic exploration and production (E&P). In 2002 he was appointed a board member in charge of E&P and remained a board member until retiring from OMV in 2010.

He concurs that the university helped plant the seeds of his career success: "The university always had a very strong focus on how you can apply everything you learn in practice in the business. There was also a necessity that you have to spend at least six months in internships. I spent most of my summer vacations in internships, not only in Austria, but also in Germany.

"I learned to work on the drilling rig and I was also working then on a platform offshore. This was the beginning of the business. I was able to really learn the business from scratch and when I graduated as a diploma engineer, today's master of science, I started in the industry and they provided me with a really, really good background."

Langanger says the university combined the theoretical and practical in a way that gave him the ability to analyze and adapt and catch up new innovations. OMV sent him to work with US companies, which improved his English.

The MUL programme in PE has improved even more in the past 15–20 years, he adds. "There has been very good development to internationalize Leoben and all the (PE) graduates now have very good international skills and can already behave in the international community." Exchanges have been started with, for example, the US and Russia.

Good reputation

The university has a good reputation in the oil business, says Langanger. "It is well known. In Europe, there are not many universities that offer PE — no more than five. If you mention Montan University in an oil business group they know it."

PE itself has changed a lot over the course of his career. In 1968, he said, a huge study forecast that "in 20 years we will run out of oil and in 25 years there would be no more iron ore, no copper and no zinc. Everybody knows they made a mistake, but then we were all fearful.

Montan University — many dignitories have passed through these doors.

"I was then 25 years old … I thought in 20 years, I am only 45 and what should I do? There were lots of technological advances which nobody predicted then. All the development in the offshore business; we are already drilling nearly 30,000 feet in the Gulf of Mexico — this was unimaginable when I finished."

So was shale gas: "Nobody believed you could crack the nut. Many people gave it a try before and failed."

The one weakness Langanger still sees in the industry — a future challenge — is the recovery rate for oil fields, which is currently at about one-third. "If the world would only be able to increase the recovery factor by one percentage point, it would equate to about two years of worldwide production."

University ambassadors

Hofstätter says the university has a rigorous but straightforward process for students from around the world to enter MUL and "is very glad to receive applications, especially from OPEC Countries. Based on their preparedness and eagerness to learn and excel, we have had the best experience with foreign students."

He states that graduates of the university are its real ambassadors and "a true asset to our institution. It is well known that most of the students coming from OPEC Member Countries have been motivated by alumni and alumnae of our university."

The petroleum engineering study in Leoben is based on five founding pillars, according to Hofstätter: drilling, production and reservoir engineering, geosciences and economics. Besides this foundation, the programme is built on a "tough but necessary" education in engineering and science fundamentals.

"We constantly develop our teaching methodology and the way we transfer skill and knowledge to our students," he says. "Master classes" have been created for the PE department which offer students a permanent teaching and study office, where the professor joins the group to teach. Tutors work with them on problems, and they have all the necessary tools available to them in a university environment.

"This combination is unique worldwide and represents a most competitive research and education environment. We truly benefit from our small size and innovative ideas, which has repeatedly earned us highest ranks in student polls of their most favorite universities in Europe."

The problems of today in the oil and gas industry are complex and require integrated approaches, according to the professor. "We believe that we need to see the university as a whole. Our strength is the combination of expertise, for example in material sciences, environmental engineering, drilling, etc. which ultimately makes the difference. Our mission and goal is to translate science and technology from all our disciplines at MUL and make it useful and create value for the oil and gas industry.

"One of our major contributions to the oil and gas industry is clearly in the area of improving efficiency, particularly for drilling, completion and production operations and in the development of environmentally friendly technologies, such as hydraulic fracturing, energy efficient drilling rigs or minimizing waste and avoiding drilling mud disposal," he notes.

Students give their impressions of Montan University

Patrick Agada.

Fatemeh Fazeli from Iran and Patrick Agada from Nigeria — both majoring in petroleum production — are some of the new crop of students at MUL from OPEC Member Countries. They are eager and excited, both about MUL and their future.

Ms Fazeli found out about the programme when she took a course in Iran with a MUL professor. She "decided to give it a shot." Ms Fazeli arrived last September and will stay for two years. She says the university has been very welcoming so far.

"I'm very positive not only about the environment — we are studying with students from all different countries — but also the level of education and the expertise of the professors are outstanding.

"I am very glad I came here because it has given me a very unique opportunity to interact not only with several other students, but also to gain more experience with high-level people in the industry."

She is experiencing something that she could never have at home, particularly due to the international environment, says Ms Fazeli. "I get to talk to different people from different countries.

"They all have their own perspective towards challenges that are in the industry at the moment and it gives me a kind of multi-dimensional perspective of everything."

Agada hails from the Niger Delta State, an oil-producing area of Nigeria. He has been at MUL since 2012, first catching up some bachelor's credits and then working on his master's, which he plans to complete in December this year. He found out about the university through his own research.

"I got to know about this university and the high standard of education here so decided to give it a try. I am happy with what I learned here. It is fantastic. I get to meet different people, learn about different cultures. I used to hear back in my country that Germans work well, like a machine. They are more realistic in doing things — less emotion and more practical. I believe it is really going to help me a lot in the future."

Fatemeh Fazeli.

Although he is not sure whether he can get a job back home in the current low-price environment, Agada says he has had the chance to meet all the big companies and potential employers of the world at MUL. BP, Mobil, Shell, Wintershall, Schlumberger, Haliburton and many other companies scout the university looking for potential employees and interns.

"The alumni of this university have not disappointed. They have contributed positively to the industry, so that is why companies keep coming to search for students."

Tarek El-Mesallamy.

Tarek El-Mesallamy is also a MUL student and currently interning at OPEC. He was chosen to attend the 6th OPEC International Seminar in June and there met some OPEC staff who recommended he apply for an internship. He is working on the much-awaited OPEC *2015 World Oil Outlook* on current market conditions and dynamics of the US market, a subject he is very interested in.

The university encourages such exchanges, says El-Mesallamy, who will finish his bachelor's degree by June next year and has plans to study for his master's. "That's actually the most important part right next to your studies — in the field. But not only in the field — time in the office is equally important. There are certain practical aspects you need to experience in a company or with a company because it is a whole different climate and scenario compared to a university class."

El-Mesallamy says MUL offers a very wide engineering basis in all studies. "Montan students are quite famous for oftentimes not sticking to their field that they started in because they are so flexible," he observes. "I think that is the main selling point of the university in general."

He appreciates that the university has professors from all over the world. "The reservoir engineering professor is from Iran, PhD students supporting lectures are from Libya. There's cultural exchange happening all over the place at the campus. And, of course, they encourage us to go abroad. There are five partner universities in the US."

El-Mesallamy says he was surprised at how recognized MUL graduates were in the oil business. "The university is famous for its reputation anyways, but you would never guess where you find the people — they are all over the place. I have met so many people from Montan University taking over leading roles in different companies and was surprised so many people here at OPEC knew of the university and its good reputation."

His colleagues are very impressed with his internship at OPEC, he says. "It is such a big organization and has a certain influence on the market with a 40 per cent market share.

"It is a certain feeling when you are working for an organization that actually changes the world, because in the end that is what OPEC does. Providing energy has always been a deciding factor for economic growth, so it is an honour.

"That is actually what I strive to do later on in my career. Take on responsibilities and be in a position that enables me to have an impact on the world, whether that may be economically, or by helping people improve their standards. It would be awesome to one day have that kind of impact," he states.

ADIPEC 2015 set to break previous attendance records

Offshore reserves to account for half of Abu Dhabi's oil production by 2018

Offshore reserves will account for around half of total oil production in the United Arab Emirates (UAE) capital of Abu Dhabi by 2018 as a result of continued investments in production capacity, according to experts.

The Abu Dhabi National Oil Company (ADNOC) is planning $25 billion in investments in offshore oil projects over the next five years, which will result in the expanded capacity.

A press release issue in connection with the Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), which is set to take place on November 9–12, said advancing the sector through developments in research and technology is becoming ever more critical to preserving it as a valuable energy resource.

The ADNOC investment is part of the UAE's strategy to boost its total oil output capacity to 3.5 million barrels/day by 2017–18 from the current 2.8m b/d.

Currently, an estimated 40 per cent of oil produced in Abu Dhabi comes from offshore reserves. However, sources say that figure will rise to 50 per cent in the next three years.

Deep water reserves

Globally, figures show that about 30 per cent of oil produced worldwide comes from offshore oil wells, and offshore resources are playing a greater role in supplying the rising demand for energy, with a growing interest in the potential of deep water reserves.

According to figures from a 2014 report by Total, the deep offshore is believed to contain more than five per cent — an estimated 300 billion barrels — of the world's liquid hydrocarbon resources, or 12 per cent of total conventional oil resources.

In 2013, deep water liquid reserves accounted for six per cent of global production. That share is forecast to rise to close to 11 per cent of conventional oil output, or 9m b/d, by 2035, according to Total.

In line with regional and global efforts to continue

Shutterstock

exploring and developing offshore production, this year's ADIPEC will be launching a dedicated Offshore, Marine and Heavy Equipment Zone situated on the waterfront at the Abu Dhabi National Exhibition Centre (ADNEC), only 150 metres away from the main exhibition floor. This new area will cover 8,000 square metres of space, with a jetty that extends 500 metres long.

"ADIPEC is pleased to be the first oil and gas exhibition in the MENA region to dedicate an entire waterfront section to offshore, subsea and marine products and services," commented Ali Khalifa Al Shamsi, Director of Strategy and Coordination at ADNOC, and ADIPEC 2015 Chairman.

"The Offshore, Marine and Heavy Equipment Zone will allow exhibitors to showcase their subsea and marine products and services in their native environment, a unique advantage that will offer both participants and visitors a valuable experience," he stated.

Dagher Al Marar, Chief Executive Officer of the Abu Dhabi offshore services company, ESNAAD, and ADIPEC 2015 Offshore and Marine Conference Advisory Board Member, said: "Offshore production will represent around 50 per cent of oil production in Abu Dhabi by 2018 and therefore ESNAAD's offshore services primary role is to accommodate the logistical and technical requirements of this vital sector within the emirate of Abu Dhabi.

"Tapping into offshore oil reserves has always had its specialty and challenges and advances in technology have been helping the industry overcome such challenges," he affirmed.

According to the ADIPEC release, a purpose-built zone that provides water access, mooring, and quayside exhibition space will allow more than 200 exhibitors to showcase a host of offshore products and services, including ships, rigs and vessels, subsea drilling equipment, oceanography and mapping equipment, pipelines and piping components, and tools for reservoir production and monitoring

The inaugural ADIPEC Offshore and Marine Conference will take centre-stage in a dedicated purpose-built waterside theatre, where more than 40 industry experts will present valuable offshore oil and gas knowledge and information.

Three keynote presentations will look at critical sector topics, including an economic analysis of offshore exploration and production, the role of the shipping industry in the 21st century, and operator cost-reduction initiatives.

In addition, 15 industry sessions will offer exclusive panel discussions, case studies, and project updates focusing on vital developments related to shipping, maritime security and safety, pipeline infrastructure and transportation, shallow and deep water exploration and production, oil field developments, drilling and completions, and technological advances.

In addition to the three-day Offshore and Marine Conference, the National Drilling Company (NDC) and Det Norske Veritas have joined hands with ADIPEC to host the 11th Annual Regional Rigowners' Seminar under the theme 'Asset Integrity: The New Industry Imperative'.

"With offshore exploration and production on the global agenda, it is crucial that we develop sustainable and cost-efficient methods of tapping into this valuable resource," commented Christopher Hudson, President — Global Energy, dmg events.

Primary energy source

"The ADIPEC 2015 Offshore, Marine and Heavy Equipment Conference and Exhibition will enable professionals to engage in thought-provoking discussions that will help make this possible," he maintained.

Efficiency through innovation and automation should be the focus of the industry when considering cost-cutting measures in today's economic environment, added Al Marar.

"Thanks to technology and new field discovery, hydrocarbons will continue to be the primary source of energy as long as they are available," he said. "Although it is important that we look into alternative sources of energy — particularly renewable energy — we also must continue developing the ones we have available."

ADIPEC is held under the patronage of UAE President, Sheikh Khalifa Bin Zayed Al Nahyan, and organized by the global energy division of dmg events.

It has grown to become a global meeting point for oil and gas professionals and today stands as one of the world's top three energy events and the largest in the Middle East and North Africa.

ADIPEC is a knowledge-sharing platform that enables industry experts to exchange ideas and information that shape the future of the energy sector. ADIPEC 2015 is expected to host more than 2,000 exhibitors, 85,000 attendees, and 7,000 delegates, once again breaking its previous records.

Indonesia looking forward to being back with OPEC producers

Indonesia's Minister of Energy and Mineral Resources, Sudirman Said.

Indonesia's impending return to the OPEC family will help it reduce its dependence on oil supplies from a small group of traders, according to the country's Minister of Energy and Mineral Resources, Sudirman Said.

The Asian country, which joined OPEC in 1962 before suspending its membership in 2009, is set to retake its place alongside the Organization's current 12 Members from the beginning of next year.

Indonesia's return is expected to be endorsed by the 168th Ordinary Meeting of the OPEC Conference in Vienna in early December.

Better position in OPEC

Said maintained that Indonesia's decision to suspend its membership after it became a net importer of oil, enabled some quarters to take advantage of the country after it effectively became cut off from the top oil producers.

"We then had to depend almost 100 per cent on a small group that was dominating supply to the country," he was quoted as saying by *Reuters*. "That was something we wanted to break up."

He stressed that once the country is again in the middle of the activities of OPEC Members "our position will be better."

The reactivation of Indonesia's membership is set to help the country enhance relationships with the top oil producers, potentially leading to long-term oil supply agreements and much-needed investment in the country's energy infrastructure.

Overtures in this direction have already been made with two of OPEC's Founding members — Iran and Saudi Arabia — as well as with Oman.

Said recently held talks with Iran's Petroleum Minister, Bijan Namdar Zangeneh, who pointed out that Iran fully supported Indonesia's return to OPEC.

He said Iran and Indonesia would continue cooperation in the market under the umbrella framework of OPEC, stating that such ties were very important for Iran.

Iran, added Zangeneh, was interested in cooperation with Indonesia in the export of crude oil, gas condensates and oil derivatives such as liquefied gas, while Indonesia was encouraged to invest in Iran's oil, gas and petrochemical schemes.

Different paradigm

Said was quoted as saying that today he saw a different paradigm in OPEC. “Maybe in the past, OPEC only represented the thinking of producing countries — I think the attitude is now more open.”

Meanwhile, Indonesia’s former Energy Minister, Dr Subroto, has been quoted as saying that the country would act as a good mediating force within OPEC.

“By rejoining OPEC, Indonesia can have the role as mediating between Member Countries that have opposing views ... because we have good relations with everyone,” Subroto, a former OPEC Secretary General, said on the sidelines of the recent Oil & Money conference in London.

He noted that when his country left OPEC it had it merely suspended its membership “so we can come back.”

Subroto also said Indonesia’s return would allow it to secure long-term oil contracts from other OPEC producers.

The country is still a net oil importer — it produced around an average of 794,000 barrels/day of crude oil in 2014.

Iran’s Petroleum Minister, Bijan Namdar Zangeneh.

Indonesia’s former Energy Minister and former OPEC Secretary General, Dr Subroto.

Call for papers

The OPEC Energy Review is a quarterly energy research journal published by the OPEC Secretariat in Vienna. Each issue consists of a selection of original well-researched papers on the global energy industry and related topics, such as sustainable development and the environment. The principal aim of the OPEC Energy Review is to provide an important forum that will contribute to the broadening of awareness of these issues through an intellectual exchange of ideas. Its scope is international.

The three main objectives of the publication are to:

1. Offer a top-quality original research platform for publishing energy issues in general and petroleum related matters in particular.
2. Contribute to the producer-consumer dialogue through informed robust analyses and objectively justified perspectives.
3. Promote the consideration of innovative or academic ideas which may enrich the methodologies and tools used by stakeholders.

Recognizing the diversity of topics related to energy in general and petroleum in particular which might be of interest to its readership, articles covering relevant economics, policies and laws, supply and demand, modelling, technology and environmental matters will be considered.

The OPEC Energy Review welcomes submissions from academics and other energy experts. Prospective authors wishing to submit papers should send them to: Executive Editor, OPEC Energy Review, OPEC Secretariat, Helferstorferstrasse 17, 1010 Vienna, Austria; tel: +43 1 21112-0; e-mail: prid@opec.org.

All correspondence about subscriptions should be sent to John Wiley & Sons, which publishes and distributes the quarterly journal on behalf of OPEC *(see inside back cover)*.

Austria's OMV looking to make quick return to Iran

OMV Chief Executive Officer, Rainer Seele.

Austrian state energy company, OMV, is keen to resume its oil operations in Iran, once the international trading sanctions against the OPEC Member Country are lifted, most probably early next year.

"We built good business relations with Iran over several years and strong personal contacts," the company's new Chief Executive Officer, Rainer Seele, was quoted as saying by *Energy Intelligence*.

In a teleconference to discuss the firm's second-quarter results, he pointed out that OMV had the technical competence to assist Iran in its petroleum expansion operations.

"The country, however, needs substantial investment and technology transfer to achieve any sustainable production increase," he maintained.

OMV is keen to pursue its contract to develop the onshore Mehr oil field in Iran, which was frozen because of the international sanctions.

Seele was part of a high-delegation led by Austrian President, Heinz Fischer, that travelled to Iran in early September to discuss further bilateral relations.

He was quoted as saying before his departure that the nuclear deal reached between Iran and the P5+1 group of world powers in Vienna in July had opened up the prospect for lucrative opportunities for international oil and gas firms on joint ventures with Iran.

While in Tehran, the OMV official held talks with Iranian Petroleum Minister Bijan Namdar Zangeneh to look at prospects of bilateral cooperation in joint investments.

Jaap Huijskes, OMV's Head of Exploration and Production, who will leave the company in the first half of 2016, disclosed that the firm's plan was to become involved in Iran's mature low-yield onshore oil concessions, where OMV could utilize its know-how to enhance recovery.

Meanwhile, Amir-Hossein Zamaniniya, Iran's Deputy Petroleum Minister for International and Trade Affairs, told the media that OMV had announced its readiness to provide Iran with technologies for operations associated with improved oil recovery (IOR) and enhanced oil recovery (EOR).

Iran's Press TV reported that the IOR and EOR technologies would be used to enhance both oil and gas fields.

"OMV has voiced readiness to double the recovery rate at Iran's oil and gas fields by using modern technologies," Zamaniniya noted.

He pointed out that the priority for Iran presently was to export gas to neighboring states. "This will be economically justifiable and will also have immediate political benefits for Iran," he added.

A consortium led by Austria's OMV is pursuing the Nabucco project to pipe natural gas to Europe. It had originally designated Iran as a key supplier of the project, but the sanctions interrupted this in 2008.

The Austrian President was actually the first Western head of state to visit Iran in more than a decade.

Austria has long had good relations with Iran. The country's Chamber of Commerce has announced that Austria is aiming to secure a five-fold increase in its exports to the Islamic Republic.

"We expect to boost our volume of trade to a value of 300 million euros in the short term," Fischer told his hosts, adding that he envisaged strong economic gains for both countries as conditions improved in Iran.

"We look forward to markedly increasing our economic relations," said Fischer in a joint news conference with Iranian President, Hassan Rouhani.

The Austrian President noted that the two governments had agreed to boost political and economic cooperation.

His visit follows the international deal reached between Iran and six major world powers — Russia, France, Britain, China, Germany and the United States — over the country's nuclear activities, which, once fully endorsed, will allow for the 12-year-old sanctions against Iran to be systematically lifted.

Al-Zour refinery a "milestone", Kuwait's capacity plans on track

In what has been described as an "important milestone", for the Gulf country of Kuwait, the Kuwait National Petroleum Company (KNPC) is in the process of signing the main contracts awarded to companies to construct the Al-Zour oil refinery.

Dr Ali Saleh Al-Omair, Kuwait's Minister of Oil and Minister of State for the National Assembly.

Construction of the plant, which will be the largest of its kind in the Middle East, is being seen as a major boost to Kuwait's economy, which has slowed due to low oil prices.

"This is an important milestone," Mohammed Al-Mutairi, KNPC Chief Executive Officer, was quoted as saying by *Reuters*.

The refinery, which has cost an estimated $15 billion to complete, is slated to begin commissioning in November 2019.

According to the KNPC website, the project is intended to provide a grassroots refinery at Al-Zour in the south of Kuwait City with a total capacity of 615,000 b/d.

"The refinery has a strategic goal of supplying low-sulphur fuel (less than one per cent, compared with the current four per cent) to local power plants. This will significantly reduce pollutant emissions and in that sense it constitutes a special importance to the environment," it said.

KNPC pointed out that the refinery, which will be one of the largest oil-refining plants worldwide, will fulfill the downstream strategy of the Kuwait Petroleum Corporation (KPC).

"In addition to its domestic benefits as the prime supplier of feedstock to the power plants, the Al-Zour refinery will enhance the competitiveness of Kuwaiti petroleum products on world markets on the account of its ability to meet the stringent requirements of those markets," it added.

Meanwhile, Kuwait's crude oil capacity expansion plans are on track, despite the current low oil prices.

Minister of Oil and Minister of State for the National Assembly, Dr Ali Saleh Al-Omair, has reaffirmed the country's plan to be in a position to be able to produce four million b/d of crude by 2020.

Speaking to reporters on the sidelines of the 2015 Kuwait Oil and Gas Show and Conference, he pointed out that huge efforts were being made to achieve the set target.

The Minister stressed that the plans were not being affected by the current low level of oil prices, stating that the country's production expansion plan was continuing and "we are seeking to achieve our aims."

Kuwait's current crude oil production capability stands at 3m b/d, a figure that will gradually be expanded to the 2020 target.

Al-Omair's comments were backed by the Chief Executive Officer of the Kuwait Petroleum Corporation (KPC), Nizar Al-Adsani, who told the conference that his company's spending on strategic oil projects had amounted to four billion Kuwaiti dinars (over $13bn) in fiscal 2014–15 and 2bn dinars so far in the current fiscal year.

KPC, he added, was looking at new investment opportunities, including petrochemical schemes in Asia and North America.

Libya looking to boost domestic refining capacity

Libya is looking to boost its domestic refining capability under a master plan drawn up by the National Oil Company (NOC).

According to a report by *Platt's*, the ambitious plan entailed almost doubling the capacity of the Zawiya refinery, in addition to constructing two new plants to reduce the OPEC Member Country's imports of gasoline and diesel.

It said Libya was currently capable of operating a total refining capacity of 380,000 b/d, but due to various technical and security issues, actual capacity was running at only around 25 per cent of this figure.

The Ras Lanuf refinery, with a capacity to refine 220,000 b/d of crude, remained out of service, while the country's other plants were still operating. These comprised the 120,000 b/d Zawiya refinery near the capital, Tripoli, the 20,000 b/d plant in the eastern port of Tobruk, the 10,000 b/d refinery in Brega and the 10,000 b/d plant in Sarir.

Master plan in place

Mohamed Ellob, Head of the NOC's Downstream Development Committee, was quoted by *Platt's* as saying that the national oil company had a master plan in place for the refineries.

"We need to develop plans to upgrade the existing plants to become economically efficient and utilize what is available," he said in London, where he was attending an industry event.

NOC figures show that, due to a domestic oil product shortage, Libya currently imports around 80 per cent of its gasoline needs and almost 60 per cent of its diesel requirements.

Ellob revealed that the upgrade of the Zawiya refinery should add another 220,000–300,000 b/d to the plant's capacity with the addition of a fluid catalytic cracker and an alkylation unit. Plans were also in place to add a propylene and polypropylene unit to the facility.

He told *Platt's* that a feasibility study to expand Zawiya was expected to start "very soon", adding that he was optimistic the extra capacity could be added in less than a year. The refinery was built in 1973 and Ellob maintained that it urgently needed to be upgraded by at least 100,000 b/d to be economically viable.

The NOC had plans to construct a 30,000 b/d refinery in southern Libya near the town of Ubari, and close to the Sharara field, while longer-term plans were for a new refinery in Tobruk with a capacity of 220,000–300,000 b/d, depending on crude availability.

Reuters

A worker inspects a pipeline at the Zawiya oil refinery.

Ellob pointed out that Libya was aiming to cut its fuel oil exports in the future, using the resources instead domestically for power generation and as refinery feedstock. Its exports comprise naphtha and different types of fuel oil.

He offered no exact timeline for the two new plants, but industry sources said this would likely depend on when the political situation in Libya was settled.

UAE targeting crude output capacity boost by 2017

Despite the prevailing depressed international crude oil prices, the United Arab Emirates (UAE) is continuing to invest in its oil and gas development plans.

The OPEC Member Country's Energy Minister, Suhail Mohamed Al Mazrouei, has stipulated that and Gulf state is on track to meet its 2017 production capacity targets.

Suhail Mohamed Al Mazrouei, UAE's Minister of Energy.

Quoted by the UAE's *WAM* news agency, he said: "We are continuing with our investments," adding that the decline in oil prices was not causing any delays.

The UAE is aiming to boost its production capacity to 3.5 million barrels/day by the end of 2017 or in early 2018, an increase of around 500,000 b/d from current levels.

The UAE capital, Abu Dhabi, is in the process of negotiating contracts for stakes in its onshore concessions with international oil companies. The Emirate's major onshore oil fields represent more than half the UAE's crude oil production.

Oil partners announced

After several years of discussions, Abu Dhabi has so far announced three partners, comprising Total, with a ten per cent working interest, Inpex of Japan with five per cent and a joint venture of South Korea's KNOC and GS Energy with three per cent.

Over 20 per cent of the concession overseen by the Abu Dhabi Company for Onshore Oil Operations (ADCO) is still available. Other projects are also awaiting approval.

The new 40-year production-sharing accords offer access to fields with more than 100bn barrels of oil in place.

But as well as developing its oil and gas output potential, Al Mazrouei pointed out that the government was also investing in alternative clean energy power sources to minimize natural gas consumption and imports. "We are investing $35 billion for that purpose," he was quoted as saying.

The UAE is aiming to cut its use of natural gas as a feedstock in power generation to 70 per cent by 2021, down from 100 per cent currently.

According to a Platt's report, the UAE was still making sizable gas-related investments. Emirates LNG, a joint venture between Abu Dhabi's state-owned Mubadala Petroleum and International Petroleum Investment Company, had spent more than $15bn over the last five years developing technically complex sour gas resources at the Shah gas field to meet growing domestic gas demand.

Students wary of unstable oil sector shun petroleum degrees

The marked decline in international crude oil prices over the past year has had knock-on effects in all quarters of the petroleum sector.

Sharply reduced earnings have meant less capital for socio-economic development and investment in future capacity additions, while many thousands of oil workers have been laid off as oil companies and service firms have been forced to retrench their operations.

And it is the extent of these repercussions from an industry that, over the years, has been inherently unstable, that is causing another concern — skilled manpower … and the lack of it.

For the last few years, alarm bells have been ringing within oil market circles over the fact that skilled personnel with many years of experience are now leaving the sector and entering retirement.

In fact, high-ranking OPEC officials, including Secretary General, Abdalla Salem El-Badri, have alluded to this fact and the dangers of not replacing these key workers at numerous international fora.

Now more evidence is coming to light over the problem.

A *Reuters* report has disclosed that enrollment in United States petroleum engineering degree programmes has declined for the first time in 13 years.

And the blame is being laid squarely on the fact that today's oil industry slump is making college students very wary of entering the "boom and bust world" of oil and gas. It is just not attractive when so much volatility and uncertainty surrounds operations.

The drop in enrollment was revealed by annual data provided by the country's 21 petroleum engineering departments and made available to *Reuters*,

It showed that the number of enrollments declined by one per cent from a record high of over 11,300 last year when the price of crude was still at around $100/barrel.

But now, with prices at around $45–50/b, the departments estimate that enrollments would fall by a further seven per cent next year.

"The students who have not made a long-term commitment yet are making a change based on what they are seeing today," Lloyd Heinze, Professor of Petroleum Engineering at Texas Tech University, who compiled the data, was quoted as saying.

Experts pointed out that a similar situation occurred during the oil price slump in the 1980s, which left a hole in the industry's workforce.

Texas Tech data showed that, in 1983, over 11,000 students enrolled in petroleum engineering programmes in the US. But by 1990 the industry was in a slump and the number dropped to 1,387.

Figures show that enrollments remained below 2,000 until 2005 when oil and gas companies began finding ways to extract significant amounts of oil and gas from shale rock deposits, paving the way for a sustained drilling boom.

In 2015, enrollment for petroleum engineering at Penn State University has fallen to 782 from 860 and the university estimates it will drop further to 565 in 2016.

"Petroleum engineering degrees will lose attractiveness in the years to come," maintained Turgay Ertekin, Head of the university's Department of Energy and Mineral Engineering. "Last time it lasted for 20 years," he observed.

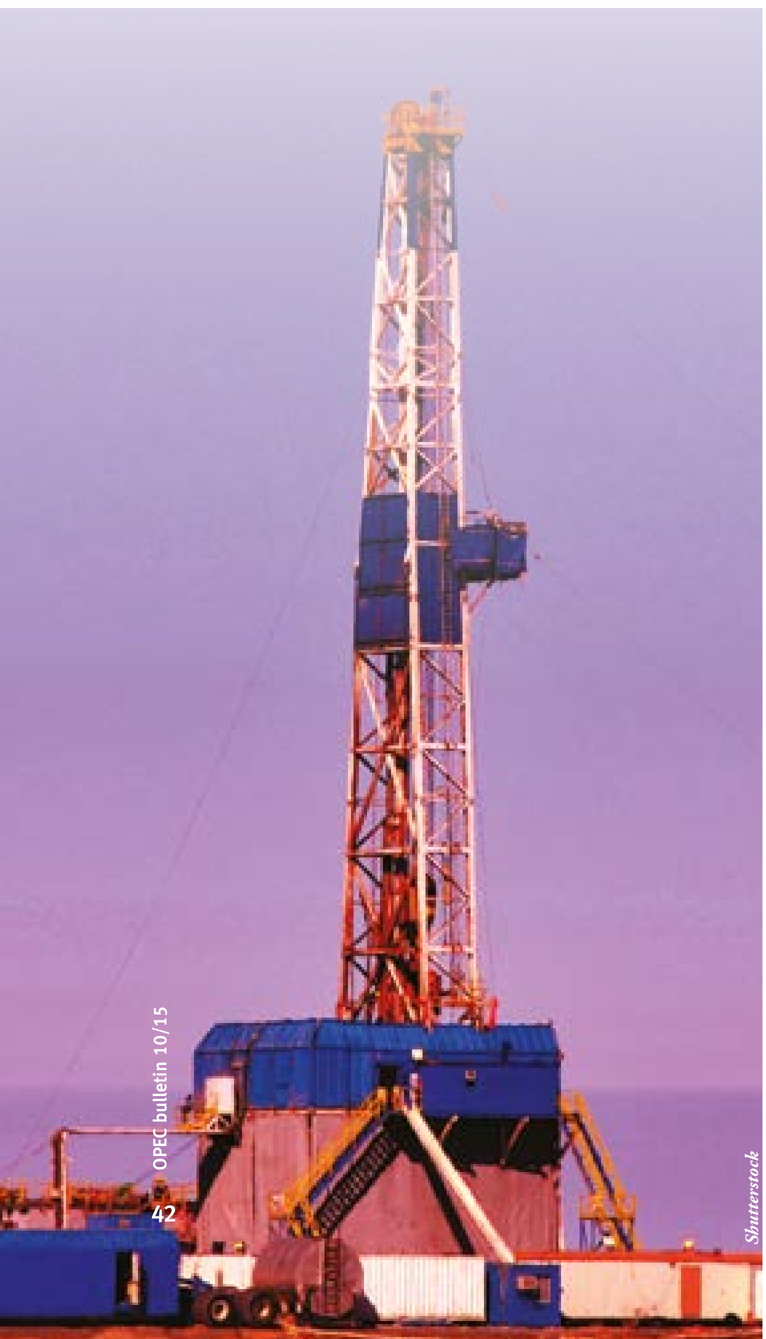
The *Reuters* report observed that past data showed it took about two years for a slump in oil prices and a subsequent slowdown to discourage students in meaningful numbers. A quick rebound in prices could temper the enrollment decline.

US shale oil output set for record drop in November

United States shale oil production, which declined for a sixth consecutive month in October, is forecast to fall by its biggest ever margin in November.

According to the US Energy Information Administration (EIA), total production is expected to decline by more than 93,000 barrels/day to 5.12 million b/d in the month.

The EIA's monthly drilling productivity report pointed out that this would be the largest monthly fall since data was first made available in 2007 in the relatively young life of shale oil.



Shutterstock

It disclosed that output from Eagle Ford in South Texas was slated to drop by 71,000 b/d to 1.37m b/d, while Bakken production in North Dakota was forecast to amount to 1.16m b/d, a decline of 23,000 b/d.

At the same time, the EIA revealed that shale gas production was expected to decline by by 294m cubic feet/day to 44.9 billion cu ft/d in November from October.

That would be the fifth expected monthly decline in a row for gas production from shale fields and would be the biggest decline since March 2014.

The news of the further decline in shale oil comes as an industry expert has warned that, as a consequence of the prevailing low crude oil prices, US shale producers will be unable to raise the capital they need to sustain their output levels going forward.

Mark Papa, the former head of EOG Resources, one of the top US shale oil firms and now, with Riverstone Holdings, a private energy investment concern, confirmed that US production had already stopped growing and was set to decline by around 700,000 b/d in 2016.

He said this decline would result in international crude oil prices moving higher once again.

Speaking at the Oil & Money conference in London in October, Papa was quoted as saying that he had been surprised by the resilience of US oil production in the low-price environment.

But he maintained that people would be equally as surprised in 2016 at just how fast US shale output would decline.

"It will be a very rapid reversal," said Papa.

He said the US shale oil industry needed crude oil prices of at least $80/b in order to sustain production growth.

Papa added that if the price of crude steadied at around $75/b, US oil production would resume growth at around 500,000 b/d.

"I see the US as a long-term growth producer," he was quoted as saying by *Reuters*. "If low oil prices prevail, then the correction in oil prices will be much more severe."

Shale oil producers have been banking on crude oil prices recovering from their lows of around $45/b. Just over one year ago, they were moving in the region of around $100/b.

Figures have shown that, in August alone, the number of North Dakota shale oil wells that had been drilled, but not undergone any fracking to release the oil, increased to a record high of almost 1,000.

This was due to producers delaying the costly excavation work in the hope the price environment would improve.

Forthcoming events

2nd African refining summit, November 16–17, 2015, Cape Town, South Africa. 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/events/emea/african-refining-summit/index.

2015 world oil and gas week, November 16–18, 2015, London, UK. Details: Oil and Gas Council, Bedford House, 69–71 Fulham High Street, London SW6 3JW, UK. Tel: +44 207 38 48 063; e-mail: amy.miller@oil-council.com; website: www.oilandgascouncil.com/event/oilgasweek.

6th shale world Europe, November 17–18, 2015, Warsaw, Poland. Details: Terrapinn Holdings Ltd, First Floor, Modular Place, Turnberry Office Park, 48 Grosvenor Road, Bryanston 2021, South Africa. Tel: +27 11 516 4000; fax: +27 11 463 6000; e-mail: enquiry.za@terrapinn.com; website: www.terrapinn.com.

6th international Mali mining and petroleum conference and exhibition, November 17–19, 2015, Bamako, Mali. Details: Africa and Middle East Trade Ltd, Unit 408, 39-41 North Rd, London N7 9DP, UK. Tel: +44 207 70 04 949; fax: +44 207 68 13 120; e-mail: jmp@ametrade.org; website: http://jmpmali.com/home.www.platts.com/events/emea/african-refining-summit/index.

European autumn gas conference — EAGC 2015, November 17–19, 2015, Geneva, Switzerland. Details: dmg :: events, 6th floor, Northcliffe House, 2 Derry Street, London W8 5TT, UK. Tel: +44 20 3615 2873; fax: +44 20 3615 0679; e-mail: conferencemarketing@dmgevents.com; website: www.theeagc.com.

Oil and gas Turkmenistan, November 17–19, 2015, 2015, 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: http://oilgasturkmenistan.com.

11th vessel efficiency and fuel management summit, November 18–19, 2015, Singapore. Details: Active Communications International (ACI), 5-13 Great Suffolk Street, 4th Floor, London SE1 0NS, UK. Tel: +44 207 98 19 800; fax: +44 207 59 30 071; e-mail: claire@acieu.net; website: www.wplgroup.com/aci/event/vessel-efficiency-fuel-management-summit-asia.

Asset integrity management summit North Africa, November 22–25, 2015, Cairo, Egypt. 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; www.assetintegrityna.com.

Project financing in oil and gas, November 23–24, 2015, London, UK. Details: SMi Group Ltd, Unit 122, Great Guildford Business Square, 30 Great Guildford Street, London SE1 0HS, UK. Tel: +44 207 827 6000; fax: +44 207 827 6001; e-mail: client_services@smi-online.co.uk; website: www.smi-online.co.uk/energy/uk/conference/Project-Financing-in-Oil-and-Gas.

7th Saudi Arabia international oil and gas exhibition, November 23–25, 2015, Dammam, Saudi Arabia. Details: International Exhibition Services Srl, Via Anton Giulio Bragaglia 33, Rome 00123, Italy. Tel: +39 06 30 88 30 30; fax: +39 06 30 88 30 40; e-mail: exhibition@saoge.org; website: www.saoge.org.

17th Africa oil gas mine trade and finance conference and exhibition, November 23–26, 2015, Khartoum, Sudan. Details: Cubic Globe Ltd, Kingspark Business Centre, Unit 104, 152-178 Kingston Road, New Malden, Kingston upon Thames, Surrey KT3 3ST, UK. Tel: +44 208 60 50 509; fax: +44 208 60 50 512; e-mail: info@cubicglobe.com; website: http://cubicglobe.com/ogtafrica/en.

EIC connect energy, November 24–25, 2015, Manchester, UK. Details: The EIC, 89 Albert Embankment, London, SE1 7TP, UK. Tel: +44 1642 379975; email: charmaine.atkinson@the-eic.com; website: www.the-eic.com/eicconnect/energy.

5th annual plant shutdown and turnaround forum, November 24–26, 2015, Doha, Qatar. 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: www.gulfoilandgas.com/WEBPRO1/Events/event_details.asp?id=2241.

Intergas VII — oil, gas and petrochemicals conference and exhibition, November 24–26, 2015, Cairo, Egypt. 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.intergas-egypt.com.

SPE oil and gas India conference and exhibition, November 24–26, 2015, Mumbai, India. Details: Society of Petroleum Engineers, Dubai Knowledge Village, Block 17, Offices S07-S09, PO Box 502217, Dubai, UAE. Tel: +971 4 390 3540; fax: +971 4 366 4648; e-mail: spedub@spe.org; website: www.spe.org/events/ogic/2014.

The Middle East heavy oil congress, November 25–26, 2015, Bahrain. Details: dmg :: events, 6th floor, Northcliffe House, 2 Derry Street, London W8 5TT, UK. Tel: +44 20 3615 2873; fax: +44 20 3615 0679; e-mail: conferencemarketing@dmgevents.com; website: www.meheavyoil.com.

5th annual oil and gas cyber security, November 30–December 1, 2015, London, UK. Details: SMi Group Ltd, 2nd Floor South, Harling House 47–51 Great Suffolk Street, London, SE1 0BS, UK. Tel: +44 207 827 60 00; fax: +44 207 827 60 01; e-mail: events@smi-online.co.uk; website: www.oilandgas-cybersecurity.co.uk/opec.

11th annual Arabian gas summit, November 30–December 2, 2015, Muscat, Oman. 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/gas-arabia-summit.

Kurdistan-Iraq oil and gas conference and exhibition, November 30–December 2, 2015, 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.cwckiog.com.

East Siberian oil and gas, December 1–2, 2015, Krasnoyarsk, Russia. Details: Adam Smith Conferences, 6th Floor, 29 Bressenden Place, London SW1E 5DR, UK. Tel +44 207 017 7444; fax +44 207 017 7447; e-mail info@adamsmithconferences.com; website: www.eastsib-oil-gas.com.

OPEC and its staff members make donations, offer help, for refugees

Red Cross

Dr Werner Kerschbaum (r), Secretary General, Austrian Red Cross Society; with Hasan Hafidh, Head of OPEC's Public Relations and Information Department.

The OPEC Secretariat in Vienna has given over €27,000 to help the refugees arriving in Austria who are fleeing Syria and the Middle East because of the continuing troubles there.

In recent months, thousands of men women and children have been flooding into Austria and Germany in search of a better life after travelling for days — a lot of it on foot — to escape the conflicts in their countries.

According to the border agency, Frontex, some 170,000 'irregular migrants' entered the European Union (EU) in August alone, taking the total for the year so far to around 710,000.

Dramatic flow

That is already almost three times the number entering for all of 2014. The figure could easily exceed one million by the end of 2015.

Some estimates are for net immigration into the 19-nation Eurozone this year of as many as 1.6m people.

Even with winter approaching, the dramatic flow into Europe this year of people fleeing war and poverty slowed only marginally in September.

With each passing day, more families and individuals arrive looking for help.

After arriving in Austria, many of the refugees have travelled on by train to other European countries, principally Germany, where they are being integrated into the community. Germany has committed to taking 800,000 asylum seekers on its own, while the EU plans to distribute another 120,000 across its 28 member countries.

Austria is also playing an important part in the integration process, but the numbers of refugees arriving have been overwhelming, hence the need for so much support, which has received a great response.

A grand total of €27,170 was donated by OPEC to the Austrian Red Cross Society and the Caritas charity organization (€13,585 each), who are spearheading the help.

The donations came from the Organization itself, as well as from its staff members. The money will help support the various activities the Red Cross and Caritas are involved in to help the refugees as they pass into Austria.

In addition to the donations, many OPEC staff members have volunteered to assist the local community in the refugee crisis, mainly in Austria, not only through money but with essential items, such as clothing and sanitary goods.

They have also been helping with translation at the refugee assembly points at Traiskirchen, Westbahnhof and Hauptbahnhof. And because of the overcrowding at these assembly areas, where migrants are having to sleep in the open in tents, people with sufficient space have been urged to host families in the interim, while places are found for them.

OPEC's donation to Caritas was made in the form of a cheque at the Organization's Secretariat in September. The charity was represented by its Secretary General, Klaus Schwertner, and Ingrid Rachbauer, responsible for fund-raising.

Cheque presentation

They were received by Members of OPEC's Management team, Hasan Hafidh, Head of the Public Relations and Information Department, and Jose Luis Mora, Head, Finance and Human Resources Department, as well as Kamal Al-Dihan, Head, Human Resources Section, Abiodun Ayeni, Finance Officer and Chairman of the OPEC Social Committee, and Hind Zaher and Diana Sarastova, members of the OPEC Social Committee.

Hafidh stressed OPEC's commitment to the refugee cause and the willingness of its staff to help the local community in its time of need.

He paid tribute to Caritas for its various non-for-profit projects and activities, especially during the current challenging time.

In response, Schwertner expressed his delight in receiving the cheque, thanking OPEC and its staff for their generous donation and commitment towards the local community.

Help for various projects

And on the invitation of its Secretary General, Dr Werner Kerschbaum, Hafidh and Ayeni, accompanied by Mrs Zaher, also visited the headquarters of the Austrian Red Cross Society in Vienna.

Kerschbaum gave a short introduction about the activities of the Austrian Red Cross and thanked OPEC and its staff members for their generous contribution, which, he said, would definitely help in the various projects directed towards the refugees in Austria.

More information and other options about how to volunteer and help can be found at the following website: https://www.wien.gv.at/gesellschaft/fluechtlinge/index.html.

Klaus Schwertner (c), Caritas Secretary General, taking receipt of the donation. L–r: Abiodun Ayeni, Finance Officer and Chairman of the OPEC Social Committee; Hasan Hafidh; Kamal Al-Dihan, Head, Human Resources Section; Ingrid Rachbauer, responsible for fund-raising at Caritas; Jose Luis Mora, Head, Finance and Human Resources Department; Hind Zaher and Diana Sarastova, members of the OPEC Social Committee.

OFID looks to the future with new corporate plan

Featuring four mutually reinforcing objectives, OFID's recently approved strategic plan represents a comprehensive framework to guide the institution through the challenging decade ahead. **Faris Hasan** (l), Director of the institution's Corporate Planning and Economic Services Unit, and **Geoffrey Skipper** (r), Senior Economist, who has since retired, look at the scope of the new directives.

When OFID's first ten-year corporate plan was launched in 2006, it was the Vienna-based institution's initial attempt at a structured approach to long-term planning, supported by financial analysis.

The new corporate plan 2016–25, approved at the 36th Session of the OFID Ministerial Council in July, builds on the achievements and lessons of the original document, while laying out an ambitious and concrete roadmap for the critical upcoming decade of development.

As evidenced by the recent approval of the United Nations Sustainable Development Goals (SDGs), the next ten years will be especially important in the fight to eradicate extreme poverty.

The new corporate plan defines itself by placing an emphasis on the integrated "nexus" approach to provide access to modern energy, clean water and adequate nutrition, a focus that was welcomed by OFID's Ministers.

One of the coming decade's many opportunities lies in strengthening this nexus approach, which makes a direct and significant difference in living standards in many poor countries.

The plan includes transportation as a fourth component to the nexus, recognizing the importance adequate roads and ports play in the effort to increase food security and farmers' incomes.

Nexus-related investment lowers costs, improves access to power and markets, and facilitates further development of the industrial and service sectors. Strengthening the nexus plays an essential role in achieving nearly all of the SDGs. The lack of financing available to private companies presents another opportunity.

By providing funds to small and medium-sized enterprises (SMEs) and microfinance via lending to domestic banks, OFID will support the primary drivers of employment in the developing world.

Direct corporate loans allow larger companies to expand operations, while guarantees increase the ability of local borrowers to obtain affordable trade finance.

While the plan identifies these opportunities, it also examines OFID's strengths and achievements.

The last decade saw OFID notch up numerous achievements, including an annual 15 per cent growth in operations, extended cooperation with other development finance institutions and cooperation agreements with ten partner institutions.

Among the lessons learned from the previous plan were the need for adaptability to deal with changing environments, the need to grow sustainably, the importance of value added and of investing in well-trained and motivated human resources and the usefulness of widening the network of OFID's relationships.

The corporate plan's analytical approach to these issues has been distilled to four objectives: optimal resources deployment; financial stability; development effectiveness; and an enhanced visibility for the organization. As the heart of the plan, each of these objectives feeds into and strengthens the others.

Deployment of optimal resources

The first objective deals with the deployment of optimal resources. To fulfil OFID's poverty eradication mandate, public sector, private sector, trade finance and grant operations will all expand.

If normal economic conditions prevail, OFID's resources will grow by 50 per cent to over $10 billion by 2025. The allocation of these resources will continually adapt to meet the needs of the institution's partner countries.

Both private sector and trade finance lending will grow at a faster rate than that of the public sector to cover support for SMEs, as well as manufacturing and trading companies.

The global financial crisis had a significant impact on sustainable development in the past decade. The worldwide economic downturn prevented the full implementation of the previous plan and made OFID's mission to eradicate poverty all the more difficult to achieve.

Therefore, the second objective of ensuring financial stability was crafted to take this into account. As a safeguard against any future financial slowdown, the new corporate plan now includes multiple scenarios, including a prudent financial case, as well as scenarios for both a weak economy and proactive lending situations.

"In many ways, OFID has moved up the learning curve since the last crisis," commented OFID Director-General, Suleiman J Al-Herbish, as he introduced the new plan to the Ministerial Council.

Financial stability will permit continued growth by implementing risk controls to keep OFID's assets liquid and by maintaining sustainable growth through returns from operations and investments.

Preparations are also underway that would allow OFID to borrow funds if additional resources are needed.

Promoting effectiveness

The selection and approval of good projects forms the basis of the third objective: promoting effectiveness.

OFID's well-known record of performance in the transportation sector and its recent, growing credibility in the energy sector are examples of the shape this objective can take.

Close engagement with all stages of a project and benchmarking performance are also important in boosting effectiveness. As operations grow and expand, enhancing professional training and developing junior members of the staff is another key component of this objective. This will be in line with OFID's active support of the Global Partnership for Effective Development Cooperation.

The fourth and final objective involves enhancing OFID's visibility to strengthen engagement with the organization's stakeholders, as well as co-financiers.

This importantly enhances the Fund's credibility by demonstrating success stories from "on the ground" activities. Greater visibility also increases the likelihood of attracting more co-financiers. This step is especially important as OFID consolidates its role as a development and financial institution.

Striking a balance between the four objectives is critical to the success of the new plan. Putting too much emphasis on expanding operations, for example, might come at the expense of financial stability. Similarly, a focus purely on maintaining stability might reduce the opportunities for visibility and the selection of effective projects.

How successfully these objectives are reached, is set by performance evaluations and key performance indicators (KPIs) for each department. These provide a gauge to measure progress and allow all employees to remain on track toward achieving the objectives. Having an effective way to monitor performance ensures that the goals of the corporate plan will be realized in the most efficient way.

Through joint work between the OFID Management and Governing Board, the new corporate plan builds on the institution's nearly 40-year legacy and puts its resources and experience to the best use.

As with any machine, the key to success is the proper functioning of each of its parts. By providing a list of KPIs and a mechanism to measure how they are met, the plan lays out a roadmap for a meaningful impact in the eradication of poverty in the world's poorest countries.

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). PRID also visits schools under the Secretariat's outreach programme to give them presentations on the Organization and the oil industry. Here we feature some snapshots of such visits.

Visits to the Secretariat

September 4 Students from the University of Redlands, California, US.

September 10 Students from the Gymnasium Kaltenkirchen, Germany.

September 28 Students from the Bucerius Law School, Hamburg, Germany.

Vacancy announcements

Legal Advisor, International Matters

Within the Secretariat, the Legal Office contributes to the conduct of the affairs of the Organization by promoting the rule of law within the Organization and in its relation with Governments, organizations, enterprises and individuals and by maintaining and defending the legal claims and interests of the Organization. The Office participates in the drafting and negotiations of contracts and agreements with external entities. It provides legal support and proposes amendments in respect of the Organization's organs, statutes and programs as well as of financial and staff regulations. It monitors developments of relevant legal aspects pertaining to the energy sector, nationally and internationally, conducts research and publishes up to date legal articles on recent and emergent trends. It protects and advances the interests of the Organization and its Member Countries in international forums.

Objective of position:

Under the overall supervision of the General Legal Counsel, the Legal Advisor, International Matters, provides legal advice to the Secretary General and to senior management regarding the Organization's relation with external entities. He/she addresses and defends international legal claims and interests of the Organization within the scope of its Statute and follows, analyses and advises on issues of national and international legal policies of relevance to OPEC and its Member Countries.

Main responsibilities:

- Identifies international legal issues of significance to OPEC, examines, studies and analyses these with a view to protecting and promoting the Organization's interests, goals and claims.
- Reports on emerging international legal issues of significance to OPEC, draws conclusions regarding possible implications for OPEC and its Member Countries and advises on appropriate responses.
- Conducts research into multilateral agreements relating to the WTO, global climate change, competition, energy and environment in collaboration with OPEC's Research Division.
- In close collaboration with the Environmental Matters Unit, monitors international legal developments at the multilateral level (ICN, WTO, UNCTAD, etc) and in international legal professional associations with a view to protecting and promoting the interest of the Organization.
- Examines, studies and analyses relevant national legal systems, policies and practices in the energy sector that may impact on OPEC.
- Provides legal advice and interpretation on legal aspects of the Organization's relations with other entities, including contractual relations, questions of liability, arbitration and claims against the Organization.
- Follows up relevant decisions of the Governing Bodies of the Organization, in particular regarding legal studies and other international legal issues of significance to OPEC.

Required competencies and qualifications:

- University degree in International Law (Master's)
- University degree: eight years with a minimum of three years at the international level
- Advanced degree: six years with a minimum of three years at the international level

Training/specialization — a combination of two or more of the following specializations: Public International Law; Competition Law and Policy; International Environmental Law and Policy; International Petroleum Law and Policy; Comparative Energy Law; The Institutional Law of International Organizations; International Law on Foreign Investments; and Other relevant specializations in international law .
Competencies: Communication skills, analytical skills, presentation skills, interpersonal skills, customer service orientation, initiative and integrity.
Language: English

Status and benefits:

Members of the Secretariat are international employees whose responsibilities are not national but exclusively international. In carrying out their functions they have to demonstrate the personal qualities expected of international employees such as integrity, independence and impartiality.

The post is at grade E reporting to the General Legal Counsel. The compensation package, including expatriate benefits, is commensurate with the level of the post.

Applications:

Applicants must be nationals of Member Countries of OPEC and should not be older than 58 years.

Applicants are requested to fill in a résumé and an application form which can be received from their Country's Governor for OPEC.

In order for applications to be considered, they must reach the OPEC Secretariat through the relevant Governor not later than **November 14, 2015,** quoting the job code: 1.1.02 *(see www.opec.org — Employment)*.

Environmental Coordinator

Within the Reseach Division of the Secretariat, the Environmental Unit's objectives are to analyse, report and advise on developments pertaining to the international debate on climate change and contribute to the close coordination of Member Countries' positions on environmental matters. This entails: monitoring and analysing international debate and development on climate change, sustainable development and trade; gathering and analysing data and information in these fields; contributing to coordination among Member Countries and participating in relevant multilateral fora and discussions; and building up OPEC's networks with national, regional and multilateral organizations.

Objective of position:

The Environmental Coordinator is to coordinate the activities of the Unit to fulfill its objectives. Under the supervision of the Director, Research Division, he/she is to study and analyse national and multilateral environmental policies and assess their impact on energy developments, in particular on the medium- to long-term oil outlook and on OPEC, study and analyse developments in the global and multilateral debate on climate change, evaluate the impact on OPEC and contribute to the coordination of OPEC Member Countries' positions in international fora on issues pertaining to environment in general and to the United Nations Framework Convention on Climate Change (UNFCCC) negotiations in particular.

Main responsibilities:

- Coordinates the activities of the Unit in line with its objectives;
- studies and analyses developments in the international debate on environmental issues related to the energy industry and in particular the activities related to the UNFCCC and its subsidiary bodies and the Kyoto Protocol;
- responsible for preparing for and attending UNFCCC meetings and reporting on these;
- assesses the impact of changes in environmental policies in consuming countries on the medium- and long-term development of the world petroleum industry;
- conducts studies relevant to the subject of environment as it affects the energy sector in general and oil in particular;
- contributes to the coordination of Member Countries' positions concerning environmental issues;
- contributes to speeches, articles and presentations to internal meetings and various international forums.

Required competencies and qualifications:

Education:
- University degree in Environmental Science or Economics, Engineering or other Sciences, preferably with specialization in environment
- Advanced degree preferred

Work experience:
- University degree: ten years
- Advanced university degree: eight years

Training specializations:
- Environmental policies
- Analysis of environmental issues related to energy
- International debate on environment
- Modelling techniques

Competencies:
- Managerial and leadership skills
- Communication skills
- Decision making skills
- Analytical skills
- Presentation skills
- Interpersonal skills
- Customer service orientation
- Team-building skills
- Initiative
- Integrity

Language: English

Status and Benefits:

Members of the Secretariat are international employees whose responsibilities are not national but exclusively international. In carrying out their functions they have to demonstrate the personal qualities expected of international employees such as integrity, independence and impartiality.

The post is at grade D reporting to the Director of Research Division. The compensation package, including expatriate benefits, is commensurate with the level of the post.

Applications:

Applicants must be nationals of Member Countries of OPEC and should not be older than 58 years.

Applicants are requested to fill in a résumé and an application form which can be received from their Country's Governor for OPEC.

In order for applications to be considered, they must reach the OPEC Secretariat through the relevant Governor not later than **November 25, 2015,** quoting the job code: 6.1.01 *(see www.opec.org — Employment)*.

More balanced oil market fundamentals predicted for 2016

October **2015**

The international oil market is likely to see more balanced fundamentals in 2016 as excess crude supply is reduced, leading to higher demand for OPEC crude, according to the OPEC Secretariat in Vienna.

Its *Monthly Oil Market Report (MOMR)* for October said required OPEC crude in 2016 was expected to average 30.8 million barrels/day, with the second half of the year reaching as high as 31.4m b/d.

The report's feature article on the development of non-OPEC oil supply said that while the increase in non-OPEC supply last year was more than twice that of global oil demand growth, this relationship was expected to flip this year before widening further in 2016 so that world oil demand growth exceeded the change in non-OPEC supply.

However, it noted that the 2016 forecast for non-OPEC supply was associated with a high level of uncertainty.

Oil price fluctuations and technical challenges — such as unplanned shutdowns and sharper-than-expected decline rates — along with geopolitical conditions, could affect non-OPEC supply in the coming year.

In reviewing the situation over the past year, the *MOMR* observed that, in 2014, non-OPEC oil supply witnessed a record-high growth of 2.24m b/d.

The OECD Americas saw the highest output of all regions with an increase of 1.92m b/d, much of which came from non-conventional sources.

Actual data for the first half of 2015 shows non-OPEC supply grew by 1.77m b/d, before dropping to 420,000 b/d in the third quarter, according to preliminary data.

"This declining trend has been driven mainly by the low oil price environment, with prices down by around 50 per cent since the third quarter of 2014," it observed

As a result, said the report, the oil industry had experienced a rapid fall in global upstream spending, down by more than 20 per cent, with North America cutting as much as 35 per cent.

"This has led to lower activity — less drilling and the delay or cancellation of new projects — which has put pressure on production growth."

Moreover, said the *MOMR*, the current price environment had incentivized the entire oil industry to become more efficient and cost-effective.

"The case of tight oil supply provides a clear example. With the decline in oil prices, rig counts were reduced by half and United States shale producers took steps to increase efficiency and cost-saving."

The article maintained that smaller operators active in tight oil had been particularly impacted by low prices as they were usually pressed for cash. Many companies had also attempted to endure by hedging their crude output, as well as securing new loans.

More recently, accessing credit had become more challenging as the decline in oil prices had diminished the value of companies' collateral.

"This has resulted in less cash available for capital expenditure, leading to an evident acceleration in the decline in production in the third quarter of this year," said the report.

The *MOMR* said that, in the light of these developments, US liquids' output in the last quarter of this year was expected to show a contraction of 150,000 b/d quarter-on-quarter and by 330,000 b/d year-on-year, down from 1.91m b/d in the fourth quarter of 2014.

In terms of non-OPEC supply, the impact of lower oil prices on production had resulted in the supply growth forecast being downwardly revised to 720,000 b/d in 2015, some 600,000 b/d less than the initial forecast and well below the previous year.

"In 2016, the postponing or cancelling of upstream projects will likely continue, resulting in the contraction of 130,000 b/d in non-OPEC supply," said the article.

It said US oil supply next year was expected to decline by 100,000 b/d, while production in the Former Soviet Union (FSU), Africa, the Middle East and OECD Europe was also expected to fall.

In contrast, Brazil's output was projected to increase, although at a slower pace as a number of anticipated projects had been deferred.

MOMR … oil market highlights

October 2015

The **OPEC Reference Basket** averaged $44.83/b in September, representing a decline from the previous month of 63¢. Fundamental factors that have weighed on the market for more than a year have persisted, but are starting to show signs of alleviation. ICE Brent averaged $48.54/b in the month, a gain of 33¢ over the previous month, while Nymex WTI averaged $45.47/b, up by $2.58. The Brent-WTI spread narrowed sharply from $5.32/b to $3.07/b.

World economic growth remains unchanged at 3.1 per cent for 2015 and 3.4 per cent for 2016. OECD growth also remains unchanged for both years at 2.0 per cent and 2.1 per cent, respectively. Key emerging economies are increasingly facing challenges and while the growth forecast for China and India remains unchanged, both Brazil's and Russia's growth have been revised down by 0.2 percentage point for 2015 and 2016.

World oil demand growth in 2015 is foreseen to rise by 1.50m b/d, following an upward revision of around 40,000 b/d, mostly due to better-than-expected data in the third quarter. Total oil demand is now forecast at 92.86m b/d. In 2016, world oil demand is anticipated to rise by 1.25m b/d, following a downward revision of around 40,000 b/d, mainly to reflect the high baseline effect. As a result, world oil demand is forecast to reach 94.11m b/d next year.

Non-OPEC oil supply growth in 2015 now stands at 720,000 b/d, following a downward revision of 160,000 b/d from the previous report, attributed mainly to a downward adjustment in the US. For 2016, non-OPEC oil supply is expected to show a clear contraction of 130,000 b/d, following a downward revision of 290,000 b/d compared to the previous assessment. Output of OPEC NGLs is expected to grow by 170,000 b/d in 2016, following growth of 190,000 b/d this year. In September, OPEC crude production increased by around 109,000 b/d to average 31.57m b/d, according to secondary sources.

Product markets in the Atlantic Basin weakened during September, due to a sharp drop in the gasoline crack spread following the end of the US driving season. Combined with increasing inventories, this caused the refinery margins to fall in the region. Asian margins strengthened on the back of tightening sentiment, fuelled by the onset of regional refinery maintenance and a downward correction in Dubai crude prices.

Dirty **vessel spot freight rates** saw mixed movements in September, with VLCCs showing the strongest growth. Compared to the previous month, VLCC and Suezmax spot freight rates increased by 27 per cent and five per cent, respectively, while Aframax rates declined. Chartering activities in the Middle East and West Africa, along with port delays, supported the gains. In the clean tanker market, West of Suez activities were behind the marginal increase in spot freight rates, while East of Suez rates remained weak.

OECD commercial oil stocks rose further in August to stand at 2,933m b. At this level, inventories were around 194m b higher than the five-year average. Crude and products showed a surplus of around 167m b and 27m b, respectively. In terms of days of forward cover, OECD commercial oil stocks stood at 63.3 days in August, some 4.5 days higher than the five-year average.

Demand for OPEC crude in 2015 is estimated to stand at 29.6m b/d, 300,000 b/d higher than in the previous report and 600,000 b/d above the previous year's level. In 2016, demand for OPEC crude is forecast at 30.8m b/d, an increase of 500,000 b/d over the previous report and around 1.2m b/d higher than in the current year.

The feature article and oil market highlights are taken from OPEC's Monthly Oil Market Report (MOMR) for October 2015. 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

	2014				2015									Weeks 35–39/2015 (week ending)				
Crude/Member Country	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Aug 28**	**Sep 4**	**Sep 11**	**Sep 18**	**Sep 25**
Arab Light – Saudi Arabia	97.23	85.93	76.07	60.13	44.47	53.78	52.20	57.73	62.62	60.94	54.95	46.52	45.56	42.95	47.91	46.13	44.92	44.75
Basrah Light – Iraq	94.49	83.57	73.94	57.94	42.58	51.82	50.53	55.61	60.40	58.63	53.10	44.32	43.41	40.85	45.56	43.95	42.81	42.67
Bonny Light – Nigeria	98.07	88.51	80.10	63.81	48.51	58.46	56.75	60.65	65.31	62.19	56.77	47.07	48.01	44.14	49.14	48.06	47.56	47.70
Es Sider – Libya	96.20	86.31	78.90	61.53	46.76	56.83	54.78	58.40	63.22	60.79	55.54	45.82	46.71	42.89	47.85	46.76	46.26	46.40
Girassol – Angola	97.15	86.78	78.68	61.83	47.98	58.27	56.86	61.12	65.51	63.28	56.46	47.42	48.01	44.69	49.72	48.09	47.35	47.58
Iran Heavy – IR Iran	96.14	84.61	74.46	58.99	42.84	53.26	51.27	56.26	61.38	59.86	54.86	46.25	44.62	42.37	47.01	45.21	43.78	43.89
Kuwait Export – Kuwait	95.30	83.99	74.04	58.25	42.31	52.25	50.52	55.96	60.92	59.29	53.85	45.28	43.96	41.57	46.36	44.60	43.25	43.13
Marine – Qatar	96.08	86.14	75.43	59.48	45.51	55.38	54.27	58.51	63.26	61.79	55.36	46.98	45.88	43.04	48.38	46.84	45.10	44.69
Merey* – Venezuela	88.61	76.17	68.42	51.17	37.96	48.41	45.79	49.49	55.09	51.74	44.43	35.26	34.13	30.27	36.45	34.35	33.53	33.30
Murban – UAE	98.93	89.10	77.85	62.27	48.41	58.56	57.41	61.66	66.18	64.59	57.58	48.83	48.88	44.77	50.39	49.06	48.18	48.46
Oriente – Ecuador	87.20	76.84	69.52	53.86	42.26	47.00	45.79	52.73	58.04	56.71	47.78	39.75	41.03	37.49	43.58	42.46	41.18	39.27
Saharan Blend – Algeria	97.10	87.61	79.60	62.93	47.91	58.18	56.93	59.75	64.12	61.69	56.34	47.17	48.36	44.24	49.44	48.41	47.91	48.05
OPEC Reference Basket	**95.98**	**85.06**	**75.57**	**59.46**	**44.38**	**54.06**	**52.46**	**57.30**	**62.16**	**60.21**	**54.19**	**45.46**	**44.83**	**41.84**	**46.92**	**45.28**	**44.20**	**44.12**

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

	2014				2015									Weeks 35–39/2015 (week ending)				
Crude/Member Country	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Aug 28**	**Sep 4**	**Sep 11**	**Sep 18**	**Sep 25**
Minas – Indonesia[1]	95.07	84.46	75.92	59.95	46.37	55.90	54.11	58.55	62.98	60.09	51.86	42.46	42.05	38.52	43.92	42.50	41.38	41.31
Arab Heavy – Saudi Arabia	93.73	82.45	72.18	56.65	40.25	51.07	49.34	54.26	59.42	58.01	53.55	44.82	43.37	40.85	45.73	44.04	42.49	42.58
Brega – Libya	96.05	86.26	79.10	62.43	47.71	57.73	55.68	59.20	63.97	61.24	56.04	46.32	47.25	43.39	48.35	47.31	46.81	46.95
Brent – North Sea	97.30	87.41	78.90	62.53	47.86	58.13	55.93	59.50	64.32	61.69	56.54	46.72	47.61	43.79	48.75	47.66	47.16	47.30
Dubai – UAE	96.47	86.73	76.33	60.25	45.57	55.85	54.66	58.55	63.54	61.76	56.15	47.87	45.38	43.90	48.04	46.15	44.51	44.49
Ekofisk – North Sea	97.75	87.87	79.27	63.15	48.48	59.22	57.18	60.51	64.86	62.21	57.02	47.53	48.24	44.65	49.76	48.24	47.65	47.92
Iran Light – IR Iran	96.41	84.90	76.88	61.32	47.42	55.97	54.79	59.34	63.97	62.28	55.76	45.74	46.16	42.45	47.47	46.12	45.34	46.16
Isthmus – Mexico	93.70	85.40	79.04	59.74	45.52	52.68	51.41	59.10	63.78	63.48	55.62	46.56	47.71	44.23	49.57	47.81	47.51	47.31
Oman – Oman	97.18	86.77	77.81	61.16	46.61	56.58	55.12	58.66	63.60	61.77	56.23	47.87	45.65	43.90	48.07	46.23	44.77	44.96
Suez Mix – Egypt	93.48	83.91	75.58	58.72	44.07	54.70	52.05	57.07	61.32	59.36	53.00	43.30	44.53	40.79	46.14	44.80	44.19	44.03
Urals – Russia	96.13	86.63	78.92	61.53	47.03	57.81	55.07	59.70	64.33	62.52	55.84	46.22	47.19	43.49	48.64	47.51	46.85	46.67
WTI – North America	93.36	84.43	76.04	59.50	47.29	50.76	47.77	54.43	59.28	59.81	51.17	42.77	45.48	40.61	46.54	45.28	45.53	45.51

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).

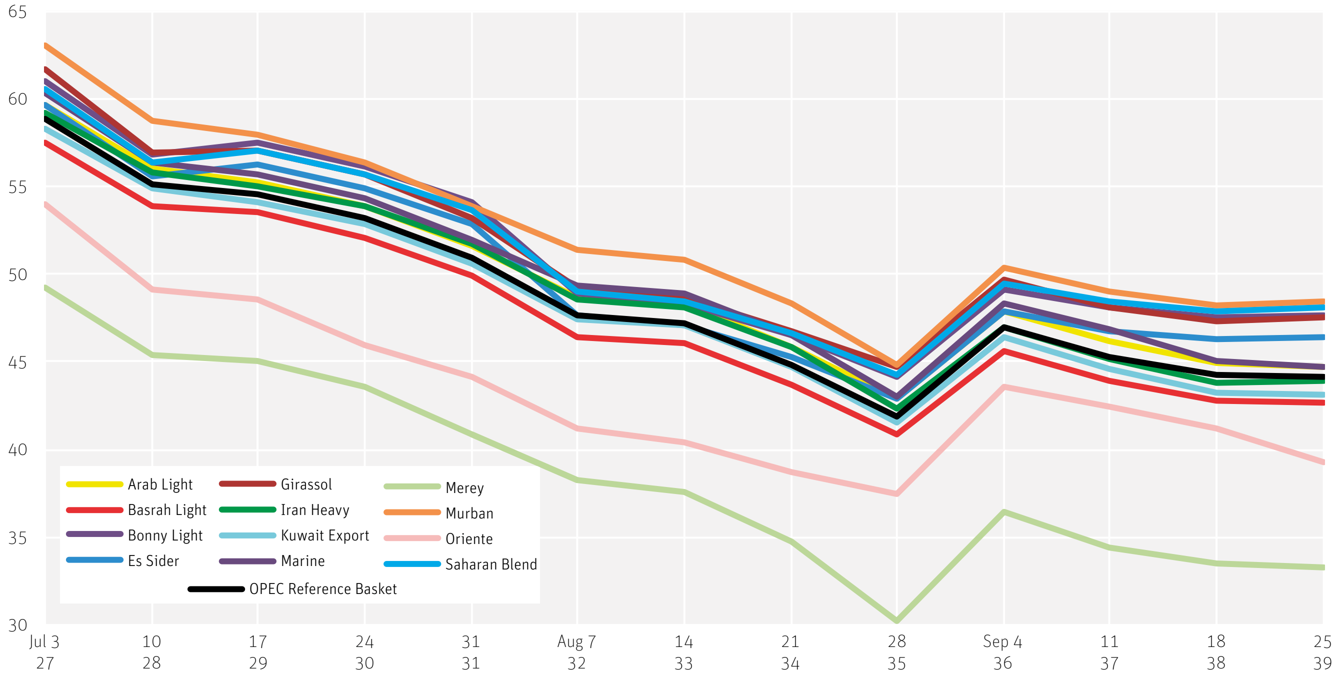
* *Upon the request of Venezuela, and as per the approval of the 111th ECB, BCF-17 has been replaced by Merey as of January 2009. The ORB has been revised as of this date.*

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

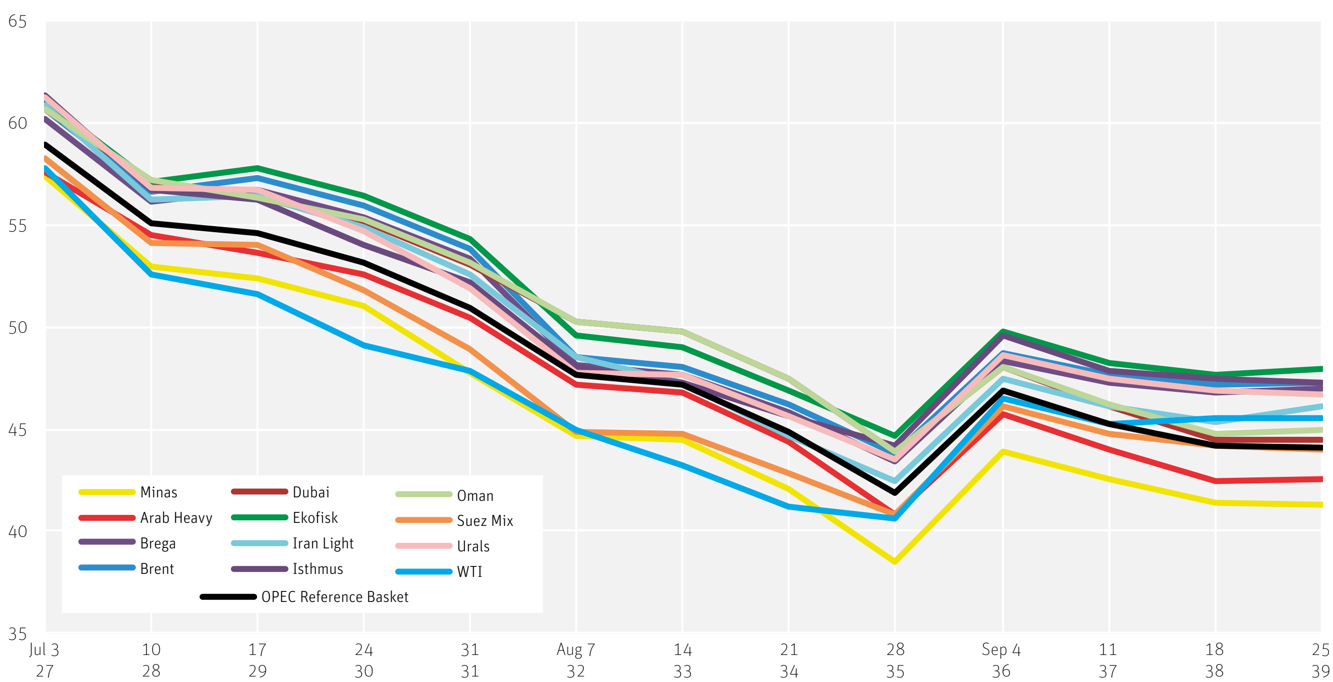
Brent for dated cargoes; Urals cif Mediterranean. All others fob loading port.

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, 2015 $/b



Graph 2: Evolution of spot prices for selected non-OPEC crudes, 2015 $/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
2014	September	93.04	117.23	111.88	114.54	86.50	86.14
	October	78.61	103.90	102.35	105.32	76.50	75.06
	November	69.44	95.79	96.25	98.35	65.55	65.66
	December	54.22	73.31	77.45	81.09	49.59	49.44
2015	January	43.66	61.80	63.24	66.67	37.20	37.79
	February	55.35	73.71	75.02	75.70	47.05	47.79
	March	55.65	77.62	71.77	71.93	45.35	46.07
	April	57.96	82.31	74.21	73.97	49.20	49.64
	May	60.76	87.70	79.16	78.67	52.57	53.41
	June	59.34	93.68	76.37	76.99	50.32	51.12
	July	52.04	90.50	68.59	68.18	44.59	45.30
	August	44.38	77.52	60.66	60.18	35.24	35.80
	September	45.30	70.72	61.41	61.35	33.88	34.41

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

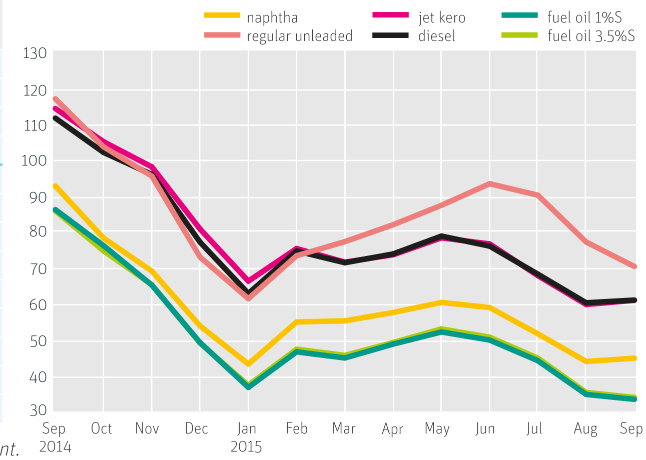


Table and Graph 4: South European market — spot cargoes, fob Italy $/b

		naphtha	premium gasoline 50ppm	diesel ultra light	fuel oil 1 per cent S	fuel oil 3.5 per cent S
2014	September	90.97	113.54	112.15	88.60	85.92
	October	75.96	99.57	101.58	76.56	75.70
	November	66.15	91.37	95.41	66.33	65.65
	December	50.28	68.70	77.48	50.62	48.88
2015	January	39.92	56.54	64.39	39.43	38.01
	February	52.53	68.31	76.34	49.07	46.78
	March	52.55	73.37	73.42	47.87	46.03
	April	54.42	78.27	75.84	51.02	49.58
	May	58.37	82.87	80.99	54.19	52.79
	June	56.05	86.19	78.19	51.87	51.46
	July	48.48	83.94	70.34	45.57	44.77
	August	42.33	70.26	62.21	36.31	35.76
	September	43.00	63.02	63.34	34.49	34.26

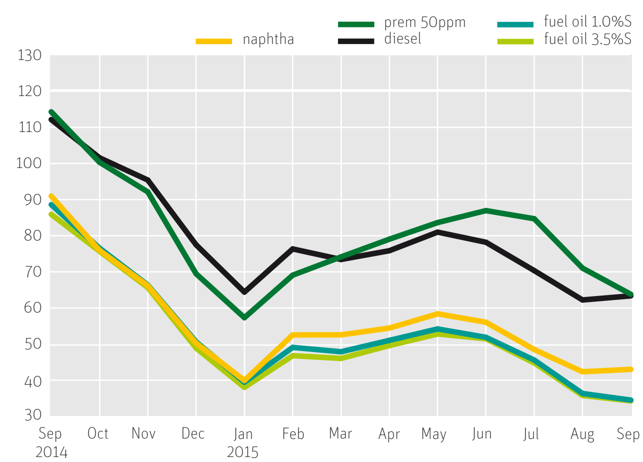


Table and Graph 5: US East Coast market — spot cargoes, New York $/b, duties and fees included

		regular gasoline unleaded 87	gasoil*	jet kero*	fuel oil 0.3 per cent S	fuel oil 2.2 per cent S
2014	September	113.53	110.71	117.52	99.44	87.09
	October	100.85	101.93	105.18	89.41	75.28
	November	91.42	94.81	103.88	83.40	65.14
	December	71.13	77.75	84.62	69.84	50.19
2015	January	57.53	67.86	67.73	57.16	40.53
	February	67.86	78.66	77.29	66.91	50.72
	March	69.59	68.35	72.79	60.93	46.49
	April	75.99	72.65	74.67	61.66	49.26
	May	82.00	76.98	80.00	61.89	53.09
	June	84.60	74.07	75.76	59.69	51.57
	July	78.66	64.91	67.53	52.31	44.15
	August	68.26	58.40	60.76	44.45	36.54
	September	61.40	59.78	61.60	43.40	35.82

** FOB barge spot prices.*

Source: Platts. Prices are average of available days.

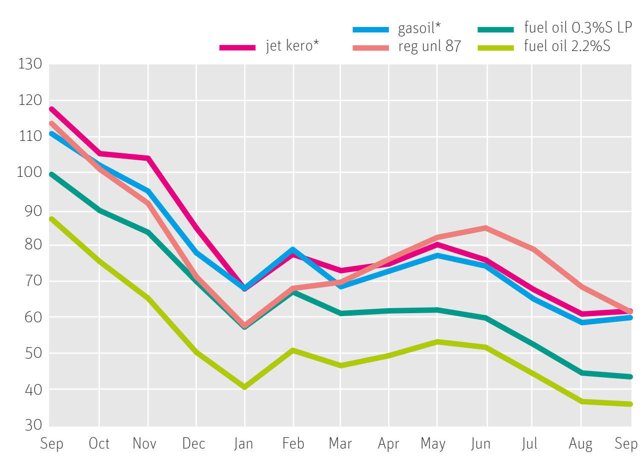


Table and Graph 6: Caribbean market — spot cargoes, fob $/b

		naphtha	gasoil	jet kero	fuel oil 2 per cent S	fuel oil 2.8 per cent S
2014	September	99.20	112.28	116.34	84.72	79.72
	October	83.11	103.02	105.12	71.56	66.56
	November	74.99	94.66	98.86	62.68	57.68
	December	53.81	73.83	77.19	47.07	42.07
2015	January	53.64	65.94	64.93	36.49	31.49
	February	64.50	74.63	74.74	47.16	42.16
	March	63.59	69.97	70.21	44.71	39.71
	April	64.91	73.26	73.41	47.16	42.16
	May	71.07	78.66	79.51	49.93	44.93
	June	70.93	73.62	74.61	48.31	43.31
	July	55.93	65.93	66.69	40.69	35.69
	August	48.73	59.16	60.13	31.43	26.43
	September	50.30	59.47	60.21	30.65	25.65

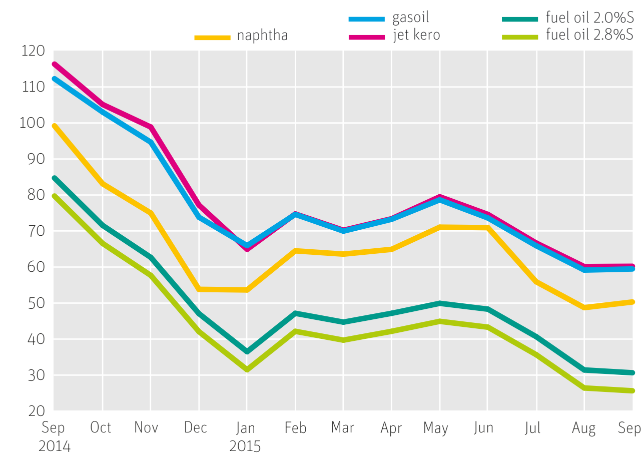


Table and Graph 7: Singapore market — spot cargoes, fob $/b

		naphtha	premium gasoline unl 95	premium gasoline unl 92	gasoil	jet kero	fuel oil 180 Cst	fuel oil 380 Cst
2014	September	94.45	110.58	108.61	111.95	112.48	88.86	89.14
	October	79.79	101.17	98.19	100.22	101.56	77.30	77.41
	November	71.86	90.44	87.94	93.85	96.41	70.11	70.38
	December	56.33	71.91	69.58	77.10	78.36	54.30	54.60
2015	January	45.23	57.42	54.66	62.67	63.66	43.02	42.59
	February	57.39	70.46	67.06	71.14	73.25	53.28	52.24
	March	57.38	73.84	70.34	70.75	70.01	50.40	49.42
	April	59.56	75.55	73.07	72.37	72.08	53.61	52.45
	May	62.04	83.73	81.10	78.02	77.69	60.02	58.22
	June	60.89	83.97	81.02	74.73	74.56	55.71	55.73
	July	53.15	75.95	72.52	65.07	65.81	47.62	47.49
	August	45.76	66.00	61.95	57.12	57.08	37.85	37.36
	September	46.81	65.24	61.59	59.48	58.99	36.61	36.58

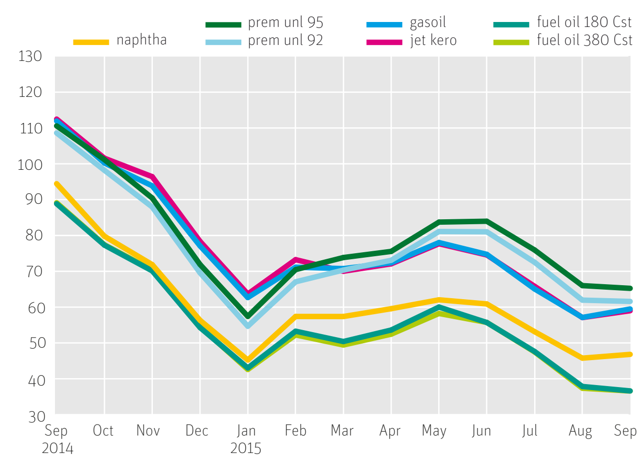
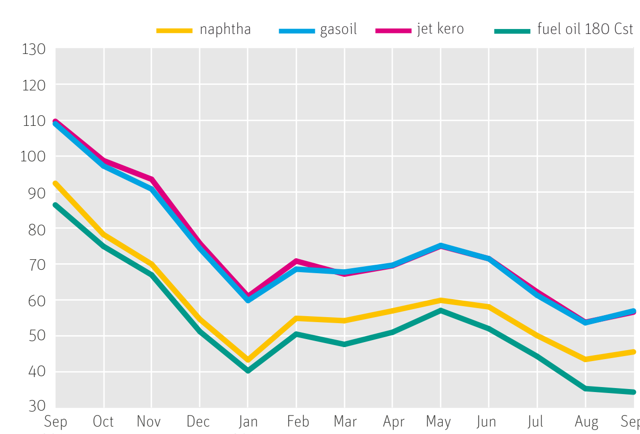


Table and Graph 8: Middle East Gulf market — spot cargoes, fob $/b

		naphtha	gasoil	jet kero	fuel oil 180 Cst
2014	September	92.44	108.99	109.68	86.42
	October	78.20	97.26	98.76	74.90
	November	69.94	90.82	93.55	66.95
	December	54.62	74.32	75.73	51.21
2015	January	43.32	59.82	60.98	40.28
	February	54.88	68.55	70.81	50.49
	March	54.22	67.74	67.18	47.63
	April	56.96	69.66	69.51	51.01
	May	59.89	75.15	74.98	57.06
	June	58.06	71.44	71.45	51.98
	July	50.09	61.29	62.23	44.31
	August	43.45	53.64	53.79	35.34
	September	45.55	56.93	56.60	34.36

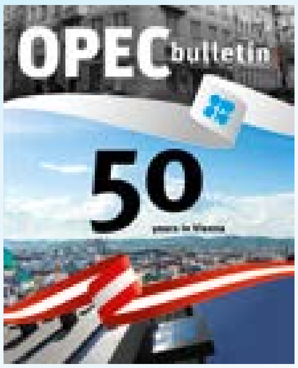


Source: Platts. Prices are average of available days.

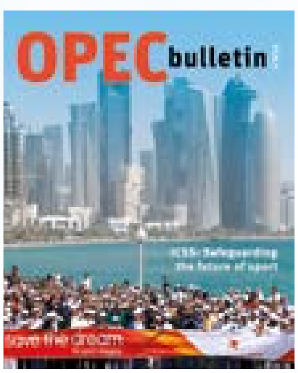
OPEC offers a range of publications that reflect its activities. Copies can be obtained by contacting this Department, which regular readers should also notify in the event of a change of address:

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

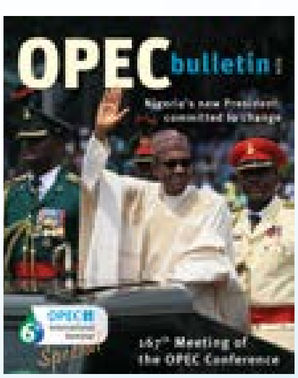
OPEC Bulletin 2015
(free of charge)



September 2015

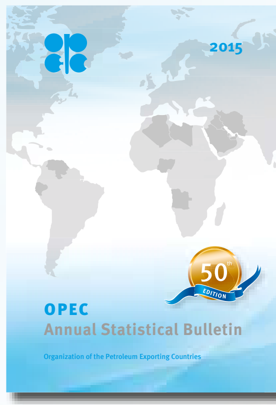


July/August 2015



June 2015

Annual Statistical Bulletin 2015 *(free of charge)*

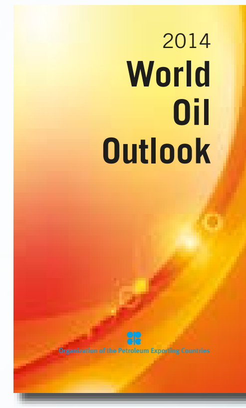


112-page book with USB
The USB (for Microsoft Windows only) contains all the data in the book and much more.

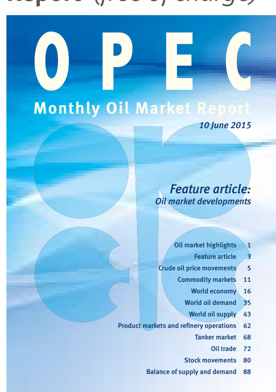
- Easy to install and display
- Easy to manipulate and query

Interactive version available at http://asb.opec.org/. Printed version will be released in November 2015.

World Oil Outlook 2014
(free of charge)

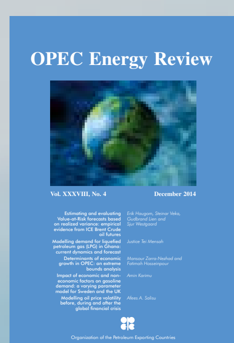


OPEC Monthly Oil Market Report *(free of charge)*



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

Annual Report 2014
(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 2015:

	Institutional			Personal
	Print	Online	Print & online	Print & online
Europe €	615	615	738	182
UK £	485	485	582	123
Americas $	814	814	977	203
Rest of world $	949	949	1,139	£123

Canadian residents, please add five per cent for GST.

Orders and enquiries:
John Wiley & Sons, 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