OPEC bulletin

5/18

UNESCO World Heritage city of

Jeddah hosts 8th JMMC

7th OPEC International Seminar

Vienna, Austria

Petroleum – cooperation for a sustainable future

20–21 June 2018
Hofburg Palace

7th OPEC international seminar: Building on cooperation

The energy world will turn its eyes to Vienna on June 20–21 for the OPEC Seminar, which will take place at the magnificent Hofburg Palace. So much has happened since the last Seminar was held in 2015, that this year's edition of the international event is sure to make for some very stimulating dialogue.

This 7th edition will be particularly special in that it is the first Seminar to be held since the historic OPEC and non-OPEC 'Declaration of Cooperation' was signed on December 10, 2016. This achievement has brought a strong international focus to OPEC, marking it as an institution which continues to take its mission to strive for oil market stability seriously. Indeed, the Organization has been 'midwife' to a collaborative decision among producers that before was never thought possible — and which is unprecedented.

With markets growing in complexity, the need for broader cooperation is more important than ever before. Thus, this year's OPEC Seminar will provide a unique platform for enhancing cooperation, while also engaging in open discussions.

Additionally, the theme *'Petroleum — cooperation for a sustainable future'* is certainly fitting, given today's emphasis on major global challenges such as sustainable development, the environment and energy poverty. In addition, the 'energy transition' — which was already a topic much debated at the biennial International Energy Forum meeting in New Delhi, India, in April of this year — will be the subject of much discussion. Understanding oil's position in this rapidly changing landscape is important — and it is sure to remain a topic of conversation for many years to come.

More than 800 key players and decision makers will be on hand at this year's Seminar, including many ministers from OPEC and non-OPEC countries. More than 100 high-level speakers and panelists — including captains of industry, officials from energy and oil ministries, executives from international oil companies and financial firms, along with representatives from international organizations and research institutions — will give presentations.

The OPEC Seminar is divided into five sessions, covering a range of topics. These include energy cooperation, technology breakthroughs, the energy transition, investment in the oil industry and world economy and the future of oil.

The event is sure to provide fresh insights into key petroleum industry issues and challenges, and is likely to enhance existing channels of dialogue and cooperation — while also stimulating new ones.

All this will take place in the Hofburg, the former imperial residence of the Habsburg dynasty, whose original structure dates back to the 13th century. After serving as the home to some of the most important people in Austrian and European history over the centuries, the elegant venue will host the OPEC Seminar for the fifth time.

Until 1918, the extensive complex was the political centre of the monarchy, and today fulfils the same role for the Republic of Austria. Inside its walls, Emperor Joseph II once drew up his revolutionary programme of reforms, the Congress of Vienna met and Emperor Franz Josef hosted audiences. Today, the offices of the Federal President are located there.

OPEC also recently celebrated Vienna as host to 100 meetings of the OPEC Ministerial Conference, as well as the 'Declaration of Cooperation' and other important OPEC events. The city has provided an environment that has allowed OPEC — and several other international organizations — to work and prosper, and is regularly voted the most 'livable' city in the world.

Along with the Hofburg, Vienna itself has an amazing history — having gone from being an imperial city, to the seat of the Holy Roman Empire, to capital of the Austro-Hungarian Empire, and finally to its most recent incarnation as capital of Austria, born out of World War II as a republic. The city's art, culture and music inspire millions worldwide.

We hope that the beauty and inspirational spirit of Vienna, and its fame as a home to many international organizations, as well as multitudes of cooperative decisions and debates in various international arenas will infuse this year's Seminar.

The 7th OPEC Seminar will — in the spirit of the city — facilitate discussions among industry leaders on mapping future cooperation. What is clear is that ongoing vigilance regarding market indicators is required, as well as quick and collective responses.

The OPEC Seminar thus will serve to reinforce OPEC's longstanding commitment to strive towards a secure and stable market in support of a healthy global economy. It will emphasize the need for continuing promotion of cooperation and dialogue among all oil industry stakeholders — including producers and consumers — for the long-term benefit of the industry and the global economy.

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Cover

This month's cover reflects the 8th Joint Ministerial Monitoring Committee, which was held in Jeddah, Saudi Arabia, on April 20 (see story on p4).

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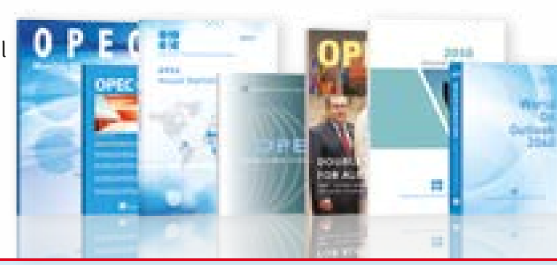
OPEC Membership and aims

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 14 Members: Qatar joined in 1961; Libya (1962); United Arab Emirates (Abu Dhabi, 1967); Algeria (1969); Nigeria (1971); Angola (2007); Equatorial Guinea (2017). Ecuador joined OPEC in 1973, suspended its Membership in 1992, and rejoined in 2007. Indonesia joined in 1962, suspended its Membership on December 31, 2008, reactivated it on January 1, 2016, but suspended its Membership again on December 31, 2016. Gabon joined in 1975 and left in 1995; it reactivated its Membership on July 1, 2016.



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An industry transformed: the 8th Joint Ministerial Monitoring Committee Meeting

L–r: Suhail Mohamed Al Mazrouei, Minister of Energy and Industry of the UAE and President of the OPEC Conference; Mohammad Sanusi Barkindo, OPEC Secretary General; Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources of the Kingdom of Saudi Arabia, Chairman of the JMMC; Alexander Novak, Minister of Energy of The Russian Federation, Alternate Chairman of the JMMC; and Pavel Sorokin, Deputy Energy Minister, The Russian Federation.

It would be an understatement to say that 2018 has been a successful year thus far for the 'Declaration of Cooperation'. Strong market fundamentals; record breaking conformity levels — the list goes on. This was the backdrop as the 8th Joint Ministerial Monitoring Committee (JMMC) meeting convened in Jeddah, Saudi Arabia, on April 20, 2018. The OPEC Bulletin *reports from Jeddah.*

Jeddah hosted the 15th and 16th meetings of the Joint Technical Committee (JTC).

Historic Jeddah: UNESCO World Heritage Site

"Like the first district of Vienna, where our OPEC Secretariat is located, 'Historic Jeddah, the Gate to Makkah,' is a UNESCO World Heritage Site." With these words, OPEC Secretary General, Mohammad Sanusi Barkindo, addressed some of the reasons why Jeddah was such an appropriate location for the meeting. In fact when one digs a little deeper into UNESCO's explanation of why Historic Jeddah earned this status, it reinforces why the city was well matched for the JMMC:

"The cityscape of Historic Jeddah is the result of an important exchange of human values, technical know-how, building materials and techniques across the Red Sea region and along Indian Ocean routes between the 16th and the early 20th centuries. Historic Jeddah represents this cultural world that thrived, thanks to international sea trade; possessed a shared geographical, cultural and religious background; and built settlements with specific and innovative technical and aesthetic solutions to cope with the extreme climatic conditions of the region (humidity and heat)."

Additionally, UNESCO states:

"Historic Jeddah is the last surviving urban site along the Red Sea coast that still preserves the ensemble of the attributes of this culture: commercial-based economy, multi-cultural environment, isolated outward-oriented houses, coral masonry construction, precious woodwork decorating the facades, and specific technical devices to aid internal ventilation.

"A multi-cultural environment. Exchange of technical know-how." With descriptions like these, it is almost as if UNESCO knew the city would bet the perfect location for a meeting of the JMMC!

Record-breaking conformity levels

A large portion of JMMC business involves reviewing and analyzing market developments of the previous month. The situation in March 2018 presented an extremely gratifying picture of the positive impact that the 'Declaration of Cooperation' continues to have on the global oil industry. Participating countries' collective efforts continued to yield results, with market fundamentals being solid. OECD commercial stock levels have been adjusted from a peak of 3.12 billion barrels in July 2016 to 2.83bn b in March 2018, corresponding to a drop of 300 million barrels.

The conformity levels with voluntary adjustments in production have been astonishing in 2018. For December 2017, the conformity figure by participating OPEC and non-OPEC countries was 129 per cent. In January 2018 it rose to 133 per cent; for February it was 138 per cent and in March it reached a superlative 149 per cent. Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources of the Kingdom of Saudi Arabia, Chairman of the JMMC; Alexander Novak, Minister of Energy of The Russian Federation, Alternate Chairman of the JMMC; Suhail Mohamed Al Mazrouei, Minister of Energy and Industry of the UAE and President of the OPEC Conference; and the OPEC Secretary General all paid tribute in their opening remarks to the effective efforts of participating countries and for their enormous dedication, commitment and selflessness.

Despite all the good news, the Ministers were keen to emphasize that the industry still needs to see the return of adequate levels of investment. According to the 2017 edition of the *World Oil Outlook*, long-term oil demand is expected to increase by 15m b/d by 2040, rising from 94.5m b/d in 2016 to 111.1m b/d in 2040. To meet the projected increase in global oil demand, investments worth an estimated $10.5 trillion will be required. Therefore, it is absolutely critical that the 'Declaration of Cooperation' continue to exert its stabilizing influence on the global oil industry.

Excellent hospitality

Ministers Al-Mazrouei and Novak spoke extensively of the wonderful hospitality generously extended by the hosts. The Secretary General echoed these sentiments, "On behalf of the entire OPEC Secretariat team, I'd like to thank Al-Falih for the outstanding arrangements made for our meetings this week. The gracious hospitality which our hosts have generously extended to us is typical given the historical tradition of the Kingdom of Saudi Arabia, a country which I first visited in 1977 (41 years ago) and have eagerly returned to at least once every year, since then. The people here have opened their homes in Jeddah, Makkah and Madinah to welcome strangers of all nationalities, for centuries. Therefore, the generous hospitality extended to us is part of this rich tradition."

The members of the JTC.

The ministers participated in an 'Ardah', a traditional Saudi sword dance.

The hospitality was also appreciated by several representatives who attended the meeting, although they are not members of the JMMC. This included Iraq, Kazakhstan and Libya. In its press release following the meeting, the Committee indicated its satisfaction with Iraq and Kazakhstan's expression of support for further improving their conformity levels.

Celebrating Saudi Arabia and OPEC

Half of the eight meetings of the JMMC have taken place outside of Vienna. Meetings have been held in Kuwait City, Kuwait (second meeting); St Petersburg, The Russian Federation (fourth meeting); Muscat, Oman (seventh meeting) and in Jeddah, Saudi Arabia (eighth meeting).

As the Secretary General stated in his remarks, "Rotating the location in this manner means that aside from conducting our regular business, the enduring bonds of friendship between all of our great participating countries, OPEC and non-OPEC alike, are further strengthened. This week, we celebrate the enormous contribution Saudi Arabia has made to OPEC throughout the last 58 years" *(see article on page 8)*.

Positivity around the oil industry

There have been enormous changes in the oil industry over the last four years. For a long period, an air of gloom pervaded industry gatherings. The 8th Meeting of the JMMC marked a watershed moment in this regard. The dark clouds dissipated and a bright, new future was touted by all participants. The meeting also attracted renewed interest in OPEC and the historic 'Declaration of Cooperation'. This heightened level of interest provided a welcome opportunity to reaffirm the fundamental purpose of the cooperation: achieving sustainable market stability.

Invigorated by the spirit of Jeddah, JMMC members left the Kingdom of Saudi Arabia with reinforced determination to continue on the rebalancing path. One could not help but be impressed by the focus on ensuring market volatility is confined to the past.

Saudi Arabia and OPEC: A history of visionary leadership

Half of the eight meetings of the JMMC have taken place outside of Vienna. Meetings have been held in Kuwait City, Kuwait (second meeting); St Petersburg, in The Russian Federation (fourth meeting); Muscat, Oman (seventh meeting) and in Jeddah, Saudi Arabia (eighth meeting). As the Secretary General stated in his remarks: "Rotating the location in this manner means that aside from conducting our regular business; the enduring bonds of friendship between all of our great participating countries, OPEC and non-OPEC alike, are further strengthened. This week, we celebrate the enormous contribution Saudi Arabia has made to OPEC throughout the last 58 years." The OPEC Bulletin *reflects on this remarkable journey of visionary leadership.*

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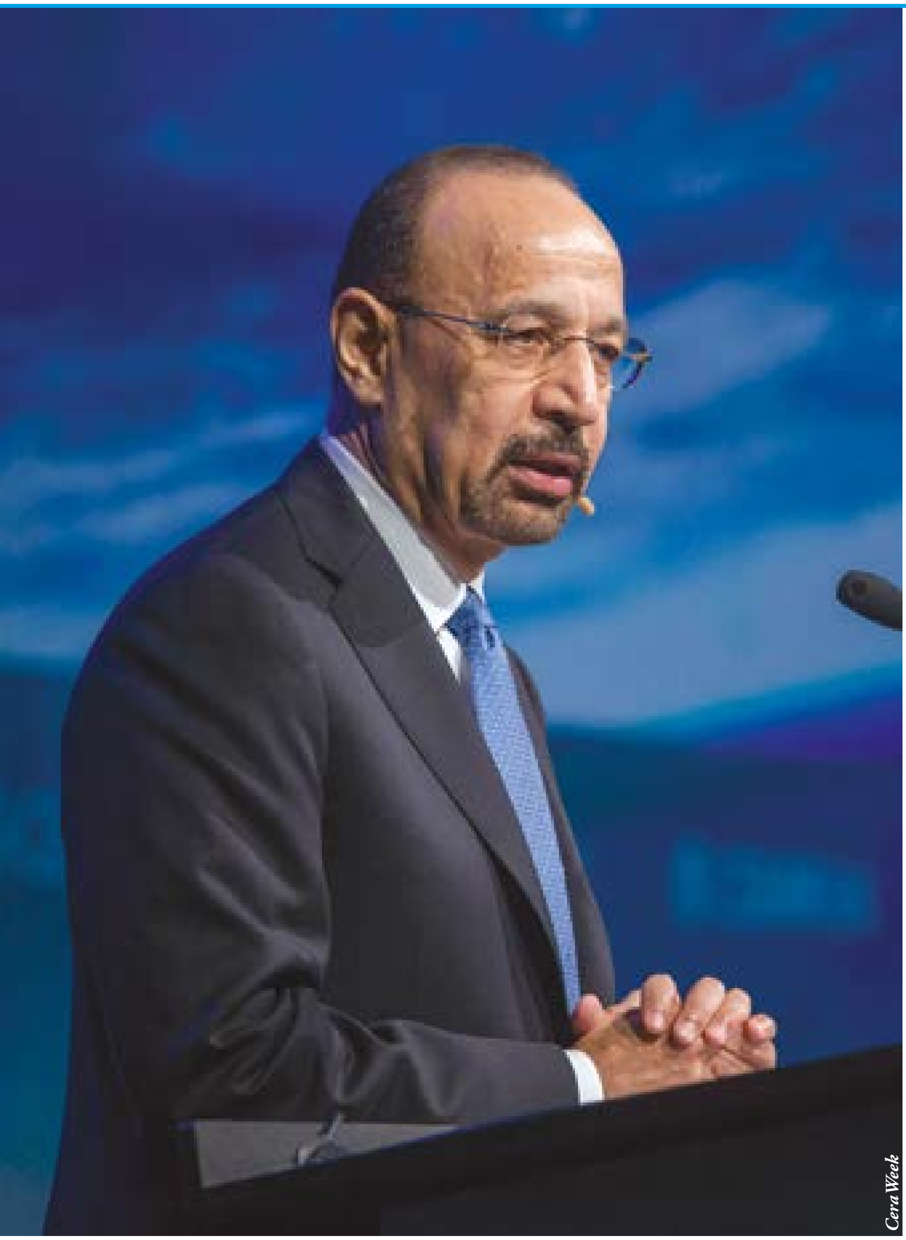


Khalid A Al-Falih, the current Saudi Minister of Energy, Industry and Mineral Resources.

Pivotal role in OPEC's founding

Historical events of monumental significance can often occur without much fanfare. They do not receive the newspaper column inches. Contemporaries do not fully appreciate the significance of what has just occurred. This was certainly the case in April 1959. In Cairo, Egypt, on the sidelines of the First Arab Petroleum Congress, Saudi Arabia's Abdullah al-Tariki met Venezuela's Juan Pablo Pérez Alfonzo, to discuss ways and means to safeguard their countries' legitimate national interests. Could these two men have imagined then that their meeting would set in motion a series of events that would change the course of history?

Tariki and Perez Alfonzo were kindred spirits and they sought to broaden discussions to include other major exporters. Together with Dr Fuad Rouhani of Iran, Dr Tala'at al-Shaibani of Iraq, and Ahmed Sayed Omar of Kuwait, these five founding fathers of OPEC forged a 'Gentleman's Agreement.' The Agreement would mark a milestone in changing the dynamics of the petroleum industry and this alliance would gestate into the historic founding of OPEC in Baghdad in September 1960.

Saudi Arabia played a pivotal role in founding the Organization and over subsequent years, the Kingdom would be instrumental in guiding OPEC to further glories. The convening of the 8th Joint Ministerial Monitoring Committee in Jeddah offered an opportunity to celebrate the enormous contribution Saudi Arabia has made to OPEC's 58 years of success.

The nascent Organization spent the 1960s developing its collective vision, setting up its objectives and establishing its Secretariat. It adopted a 'Declaratory Statement of Petroleum Policy in Member Countries' in 1968, which emphasized the inalienable right of all countries to exercise permanent sovereignty over their natural resources in the interest of their national development.

Crucial throughout this entire process was Saudi Arabia, which hosted the 5th OPEC Conference in Riyadh in 1963 and the consultative meeting of the five Member Countries in Taif in 1967, as well as the guiding hand of Mohammad S Joukhdar, who was heading the Organization as Secretary General in 1967.

Ali I Naimi, Saudi Arabian Minister of Petroleum and Mineral Resources (1995–2016).

HRH Prince Abdulaziz Bin Salman Bin Abdulaziz Al-Saud, the current Minister of State for Energy Affairs.

Able leaders

Following in the footsteps of Tariki, Saudi Arabia has been served by outstanding and extremely able Ministers.

These include: Ahmed Zaki Yamani, Minister and Head of Delegation to OPEC from 1962 to 1986; Hisham M Nazer, Minister and Head of Delegation to OPEC from 1986 to 1995, who sadly passed away in 2016; Ali I Naimi, Minister and Head of Delegation to OPEC from 1995 to 2016; and Khalid A Al-Falih, the current Minister of Energy, Industry and Mineral Resources and Head of Delegation to OPEC.

HRH Prince Abdulaziz Bin Salman Bin Abdulaziz Al-Saud, the current Minister of State for Energy Affairs, has also been instrumental in steering negotiations for the adoption of several landmark OPEC Declarations, acting as Chairman of the High Level Officials of Drafting the Caracas Declaration, Chairman of the High Level Officials of Drafting the Riyadh Declaration and Chairman of the Long-Term Strategy.

Each Minister has made their own unique contribution to the betterment of OPEC's aims, as well as enriching dialogue between OPEC and other stakeholders in the international energy community.

OPEC has also benefitted immensely from the vision and foresight of HRH Prince Mohammed bin Salman Al Saud, Crown Prince of the Kingdom of Saudi Arabia, who played a critical role in ensuring the adoption and successful, ongoing implementation of the 'Declaration of Cooperation'.

The Crown Prince has consistently demonstrated his commitment and support for OPEC and was particularly instrumental in forging close relations with The Russian Federation, a relationship that has underpinned the 'Declaration of Cooperation'. In supporting King Salman Bin Abdul Aziz Al-Saud, the Custodian of the Two Holy Mosques, the Crown Prince will continue the development and renaissance of the Kingdom though Saudi Vision 2030.

Saudi Arabia has facilitated the enhancement of OPEC's reputation, dedicating itself to working towards market stability in the interests of producers, consumers and the global economy. Indeed the International Energy Forum has its headquarters in Riyadh and remains the only international energy body under whose umbrella both consumers and producers can cooperate on energy issues, exchange information and gain deeper understanding of both sides' perspectives.

The Kingdom has organized successful and landmark meetings, summits, conferences and symposiums, each propelling the Organization forward. Under Naimi's leadership, the Third OPEC Summit of Heads of State and Government was held on November 16, 2007, in Riyadh. This concluded with the Riyadh Declaration, which reaffirmed the inalienable and permanent sovereign rights of OPEC Member Countries over their natural resources.

'Declaration of Cooperation': a new chapter in an ongoing success story

Saudi Arabia has earned its reputation as a leader, a guide and an inspiration for the entire OPEC family. It is a legacy that has continued through the formation and implementation of the historic 'Declaration of Cooperation' between OPEC and non-OPEC oil producing countries. This landmark event has helped transform the international oil industry, as we look to usher in a new era of sustainable oil market stability in the interests of producers, consumers and the global economy alike.

Khalid A Al-Falih played a critical role in securing the adoption of the 'Declaration of Cooperation' throughout the arduous negotiations in 2016. His diplomatic skill, personal dedication and inspiring leadership were crucial in reaching consensus. In his capacity at the President of the OPEC Conference in 2017, the first year of the implementation of the 'Declaration of Cooperation', the Minister further excelled.

Navigating the first year of implementing our production adjustments was an onerous challenge, but it was one which Minister Al-Falih rose to commendably. The wonderful partnership he developed with Alexander Novak, Minister of Energy of The Russian Federation, provided the joint endeavours with a pillar of stability and a rock of dependability. The ultimate testament to the Minister's skills, diplomatic tact and commitment is the fact that monthly conformity levels with the voluntary production adjustments averaged an astonishing 107 per cent throughout 2017, a level unprecedented in the history of the Organization.

The 'Declaration of Cooperation' partnership is now an established fact, constituting a new entity in the global energy industry. We must remember that this was not inevitable; indeed, the original 'Declaration of Cooperation' agreed at the joint OPEC-non-OPEC Producing Countries' Ministerial Meeting held on December 10, 2016, was only for six months.

The fact that it was extended twice during Al-Falih's tenure as Conference President, at the second joint OPEC-non-OPEC Producing Countries' Ministerial Meeting, held on May 25, 2017, and at the third joint OPEC-non-OPEC Producing Countries' Ministerial Meeting, held on November 30, 2017, speaks volumes about his statesmanship, diplomatic nous and discernment. Given the outstanding job Al-Falih did in 2017, it is no surprise that he has continued on this trajectory in 2018, as Chairman of the Joint Ministerial Monitoring Committee.

In February 2018, the Minister was also presented with the 'International Oil Diplomacy Person of the Year 2017' Award at the Energy Institute's International Petroleum (IP) Week, a fitting tribute to his outstanding performance in 2017.

Constant leadership

OPEC has encountered enormous change throughout its history and is currently beginning an exciting new chapter with the 'Declaration of Cooperation' strategic partnership at the helm. Throughout all the highs and lows, one thing has remained constant: Saudi Arabia has been a champion of market stability and an inspiration through its leadership. Successive Heads of Delegation have reinforced this, meaning that OPEC and Saudi Arabia have truly benefitted from a history of visionary leadership.

Abdullah Al-Tariki, Minister of Petroleum, Saudi Arabia (1960–62).

Ahmed Zaki Yamani, Saudi Minister of Petroleum & Mineral Resources (1962–86).

Hisham M Nazer, Saudi Minister of Petroleum & Mineral Resources (1986–95).

Ali I Al-Naimi (r), Former Minister of Petroleum and Mineral Resources, Kingdom of Saudi Arabia; with Mohammad Sanusi Barkindo, OPEC Secretary General.

Ali I Al-Naimi:
OPEC icon returns to the Secretariat

Ali I Al-Naimi's *life story is one that needs to be heard. From nomadic Bedouin to global oil's central banker, Al-Naimi's career saw him literally rise from office boy to become the world's most powerful oil executive for more than two decades. The* OPEC Bulletin *reports on his return to the OPEC Secretariat to talk about and discuss his extraordinary memoir —* 'Out of the Desert: My Journey From Nomadic Bedouin to the Heart of Global Oil'.

Al-Naimi was greeted by the OPEC Secretary General, Mohammad Sanusi Barkindo, as well as other dignitaries, including former OPEC Secretary General, Abdalla Salem El-Badri, Member Country Ambassadors and members of the OPEC Board of Governors on his return to Vienna. It was an opportunity to listen to an astonishing life story, to recognize one of the greatest energy leaders of the past century, and to acknowledge his dedication, commitment and contribution to the Organization over decades.

Born in 1935, three years after the founding of the modern state of the Kingdom of Saudi Arabia, Al-Naimi's story personifies the country's rise to a regional economic powerhouse. He spent his early years living in a desert tent; as a child he herded sheep; and then at 12 years of age, he began work as an office boy for Aramco, which at the time was owned by US companies.

Aramco quickly became his home and an extension of his family. It sent him to Lebanon for his first formal education and then to US universities. His intelligence, courage, astuteness, as well as his dedication to the company, was quickly recognized by the company.

Rapid promotions saw him become the first Saudi Arabian national to be named President of the company in 1984 and then the first Saudi Arabian CEO in 1988. He was then appointed Minister of Petroleum in 1995. It was a time of great change in the industry, and Al-Naimi's personality and diplomatic skills quickly came to the fore. He was a loyal servant to his country and fought for 'the heart and soul' of Aramco and Saudi Arabia both at home and abroad, and at the same time provided guidance and direction for the future of OPEC.

This was all noted in welcoming remarks by Barkindo, who said that "during his more than 20 years as Minister, he oversaw a new and remarkable era for the Kingdom's oil and energy sector … and also played a central role in helping guide OPEC and shape the Organization's strategies and actions, with great wisdom and expertise."

Barkindo said that up until May 2016, when Al-Naimi stepped down from his Ministerial office to become an Advisor to the Royal Court, "he had attended 42 Ordinary Meetings of the OPEC Conference and some 27 Extraordinary Meetings as Head of the Kingdom's Delegation."

He added that "he was always a giant presence at the OPEC Ministerial Conference, not only in the meeting room, but outside in boardrooms, trading houses and the assembled media who would scrutinize every comment His Excellency uttered. For more than two decades, oil market participants hung to his every word — whether he was taking a characteristic run or stroll at dawn on Vienna's Ringstrasse, hurrying through a hotel lobby after a conference, or dodging throngs of reporters at an OPEC meeting."

Happy to return

Al-Naimi thanked the Secretary General for the invitation and the welcome, and said that "it is a pleasure to be back at OPEC in Vienna. And more so because I am not being pursued by journalists asking me about the future price of oil!"

In front of a packed audience, with OPEC Secretariat and OFID staff present, Al-Naimi initially recalled his first meeting as minister in 1995, and the fact that it was set to start at 10 am. "I arrived just before 10 am. No one else arrived. So I waited. One by one, the other ministers arrived. By midday, they had all arrived. It turns out there was a competition to arrive last in an effort to appear as the most important."

He then said that when the meeting was brought to order, he put up his hand and said: "If the meeting is set to start at 10 am, let us be here at 10 am. If it starts at midday, let's arrive at midday." He smiled, and added, "no ministers were late again."

"Morality is vital. Treating people with decency is important. If you want people to serve you, not out of fear, but to serve you out of conviction, then you have to be aware and respectful of them."

In talking about OPEC, in general, Al-Naimi said the Organization was created in 1960 to protect the interests of producing nations. "Today, it remains a key global organization, significant for producers, consumers and the global oil market. And its decisions have a direct impact on the health of the world's economy."

He stated that OPEC still has a key role to play across a range of subject areas, from the importance of energy to global economic growth, to the vital role of hydrocarbons in the future energy mix, to climate change issues. He added that "these are all great challenges for the future — and OPEC must remain a powerful voice in the debate."

Al-Naimi then opened the floor to questions, which was followed by a question and answer session with the *OPEC Bulletin (a transcript of which can be found below).*

Ali I Al-Naimi (l), Former Minister of Petroleum and Mineral Resources, Kingdom of Saudi Arabia; with OPEC Bulletin *interviewer, James Griffin.*

Q&A

OPEC Bulletin — What was the motivation behind writing the book?

Al-Naimi — I actually did not want to write anything, but my grandchildren and my children insisted that I write something about myself and what I had done with my life. It took me quite a number of years to decide to do it. Then when I made the decision to write the book I did it in two years, because it took quite a lot of dictation, recording and transcribing. Now the book is out, it was printed in English, then translated into Arabic and I just received a version in Chinese. And maybe there will be other languages it is translated into.

Looking back to the early part of your life, when you joined Aramco as an office boy in 1947, what ambitions did you have?

I just wanted an education. That is all I really wanted because I began life as a nomad and this was the first eight years of my life. My brother then took me to school and I did not even know what school was until I found young people like me saying "this is a dog", "this is a wolf", "this is a cat". I followed them and I really thought that an education is my primary objective.

You continued your education in Lebanon and then you went to Lehigh University in Pennsylvania. What were your initial thoughts of the US? Was it a culture shock? And what was the general impression of Saudi Arabia among US students?

Actually, one of my American professors told me I was the least affected individual in terms of integrating from a cultural perspective. The reason for this is simple. In Aramco, of course, we had many Americans and we worked directly with them. It was no real change when I went there to study. In fact, I played baseball before I went to Lehigh, so when I was there I saw the teams and I played with them. I played soccer there too. It was almost natural being there.

There were actually only two Saudis at Lehigh. One doing graduate work, living there with his family, and there was me as an undergraduate. I had many American friends; we socialized and did many things together.

Adapting is not very difficult for me. Even today at my age I can adapt to almost anything. So it is flexibility in mind and in action.

Looking back at your time as Saudi petroleum minister between August 1995 and May 2016, and specifically your time within OPEC, what do you feel was the biggest challenge you faced?

From the perspective of OPEC, I believe the biggest challenge was to get all the Ministers of the then 12 countries to agree on resolutions. It was one of the toughest things because you had countries with varying viewpoints and differing economic situations. To convince every one of them to vote for a resolution that may not be 100 per cent in their interest was not easy. Everyone was trying to push their interests, which is natural, but in the end you have to compromise. Learning to compromise was the biggest challenge. And I can say that we succeeded.

Staying on the topic of OPEC, how do you view the current OPEC and non-OPEC collaboration through the 'Declaration of Cooperation'?

Dialogue is good. I think what is happening now between the 24 producing countries is good for them, and we should continue working for the benefit of the oil industry, not only for OPEC, but for the whole oil industry. You need stability for producers to invest. If no investments are made, it will be bad for the industry in the years ahead, and this will be bad for consumers. I think what is happening know is an awareness of that, and I hope this cooperation between the 24 countries will continue. It is important to talk to each other, and meet frequently.

Do you miss anything about no longer being, as Alan

Greenspan described, 'the most powerful man you've never heard of'?

To begin with, I should say that I never felt I was this powerful man. All I ever did is what I believed to be right. And that is it. I was really not looking for glory. Additionally, I should add that I always tried to be flexible. It is vital to understand if someone shows you that you are wrong. Try to understand the other viewpoint, and if it is correct then move with it. Do not be stubborn; it is important to have flexibility.

In this* Bulletin *interview, and earlier today, you have talked a lot about principles and morals. Do these come from your childhood/upbringing?

Yes. Morality is vital. Treating people with decency is important. If you want people to serve you, not out of fear, but to serve you out of conviction, then you have to be aware and respectful of them.

As I said earlier today, a CEO and a janitor should be treated the same way. If you are doing the best you can to achieve the objective that has been put in front of you, then you should receive respect. If the janitor is doing a great job, we should salute him. And if the CEO is doing a lousy job, we should fire him. In my life I have always tried to treat people fairly. We should treat everyone with respect.

You played a pivotal role in the setting up of the King Abdullah University of Science and Technology (KAUST), which is something close to your heart. How important has this, as well as other new universities, been to the Kingdom and the education of its people?

KAUST was a great vision of a great man. We had to do it fast. I think we finished it in two years, and it then took some time to get all the books, the professors, and all the talented students it now has from all over the world. The benefits of this can be seen today in the fact that 80 per cent of those graduating from KAUST seek jobs in the Kingdom. That is a major contribution, because you are dealing with some of the cleverest people in the world. And that is what KAUST means to the country.

There are many challenges in the Kingdom, and these young graduates are rising to the challenges, because they have the right education to be able to meet them. That is what KAUST does — it gives you the right tools to meet the challenges.

From the perspective of the younger generation, given your experience is there one piece of advice you would give to a young man or woman starting out in the oil industry today?

Ali I Al-Naimi signing a copy of his book 'Out of the Desert: My Journey From Nomadic Bedouin to the Heart of Global Oil'.

Yes. It is simple. Work hard, believe in what you do and have an objective. One piece of advice I give to people is to work hard to advance the causes of your boss, because if your boss advances and they know that you are the cause of it, then you will also advance. That is what I have done over my career.

Looking to the future of energy, what do you think the oil industry needs to do to stay as a leading component in the global energy mix as we move into a more carbon-constrained world?

This is a very serious question: the future of energy. For oil, we should not get hung up only on oil as a transportation fuel. Think of where 50 per cent of the oil we produce today goes — it goes for petrochemicals and many other things. You can look to jack-up that percentage. Oil can be used for many other things, rather than just burning it as a fuel.

The oil industry also needs to continue to develop and push technologies that not only reduce emissions, but if you have to have emissions, then they should be clean. You can recycle them. That is being done today. For example, Saudi Aramco has a large research centre in Michigan that is tasked to create the cleanest engine and the cleanest fuel, to create the fewest emissions.

In Saudi Arabia, we need to utilize the sun. We will always have oil and gas in the country, but I believe that for power generation, solar will be the main source in the future. We certainly have the acreage. We should also be able to generate so much power from the sun, that we can transmit it worldwide. Thinking about Austria, when you fly into the country you can see lots of windfarms. Wind is available all of the time, and it will also be an important part of the energy future.

We as people should not be scared of change. We should welcome change, and manage it.

What do you think your life story tells readers about opportunities in the Kingdom of Saudi Arabia? And looking ahead, what are your hopes and dreams for the Kingdom's future?

We need to recognize that Saudi Arabia is going through a transition. More importantly we need to recognize that Saudi Arabia has a lot of resources, whether they are mineral or human resources. And they are plentiful. We are very fortunate. The focus now is to utilize all of the resources that the country has.

The blessing we also have is that our population is youthful. The average age is around 30 years old. Many are graduating from our universities, and many are returning from abroad. They will participate significantly in the development of the Kingdom in the years ahead.

In terms of opportunities, I am a believer that individuals make their own opportunities. You do not wait for an opportunity to arise; you create an opportunity by working very hard and being dedicated. It is important to always have an ambition, and not just one ambition, it should be many ambitions. And hopefully those ambitions over time become greater in value.

It is clear today that there are now more opportunities in the Kingdom, compared to when I was starting out. The reason for this is because we have come to know about the resources we have. During my time we had one oil company, and we were all working for that company. But today, you have so many companies, so many resources and so many education facilities.

I am an optimist. I think the country has a very bright future. I honestly believe that what we have done in the past is miniscule compared to what we are going to do in the future.

What plans do you have for the future? Will you be writing any further books? Or will you be focusing on your passion for hiking?

There are many things not in this book, and one day I may sit down and write more. It may be published, it maybe not. I write every day anyway, and perhaps this time it will be about special experiences having travelled all over the world. To work on another needs courage and time, as well as persistence from my family. If they insist, then I will do it.

I am still a hiker. I am still a mountain climber, although I do not climb in winter because there is a lot of ice. I will continue to do this.

Perhaps then you might want to write a book on hiking?

It is a possibility. You never know.

Ali I Al-Naimi

Former Minister of Petroleum and Mineral Resources Kingdom of Saudi Arabia

Career chronology

1995–2016	Minister of Petroleum and Mineral Resources, Kingdom of Saudi Arabia
1995–2015	Chairman of the Board of Directors, Saudi Aramco
1988-1995	Chief Executive Officer, Saudi Aramco
1984–88	President, Saudi Aramco
1982–84	Executive Vice President of Oil & Gas Operations, Aramco
1980	Elected to Board of Directors, Aramco
1978–82	Senior Vice President of Oil Operations, Aramco
1975–78	Vice President, Production & Water Injection, Aramco; Acting President, Aramco Overseas Company, The Hague (1977)
1974–75	Manager, Northern Area Production Department, Aramco
1973–74	Manager, Southern Area Production Department, Aramco
1972–73	Assistant Manager, Production Department, Aramco
1969–72	Superintendent, Abqaiq Production Division, Aramco
1967–69	Executive Development Assignments: Economics Department, Public Relations Department, Aramco
1963–67	Hydrologist/Geologist, Exploration Department, Aramco
1956–63	Aramco Higher Education Training Programme (Lebanon; United States)
1953–56	Geological Technician, Exploration Department, Aramco
1947–53	Trainee, Aramco 'Jabal School'

- He was also Chairman of the Saudi Geological Society and remains Chairman of the King Abdullah University of Science and Technology (KAUST).

- He holds a degree in geology from Lehigh University (Pennsylvania, US) and a Masters in hydrology and geo-economics from Stanford University (California, US). He also completed the Columbia University Executive Programmes and the Harvard University Advanced Management Programme.

- Al-Naimi's honours include the King Abdulaziz Sash of the Second Order; the Medal of Battle and Medal for the Liberation of Kuwait (Saudi Arabia); The Order of Industrial Service Merit, Gold Tower (South Korea); The Congressional Medal of Achievement (Philippines); and Honorary Residency, City of Abuja (Nigeria). He holds honorary doctorates from the universities of Heriot Watt (Scotland), Peking, Seoul National, the AGH University of Science and Technology (Poland) and Lehigh.

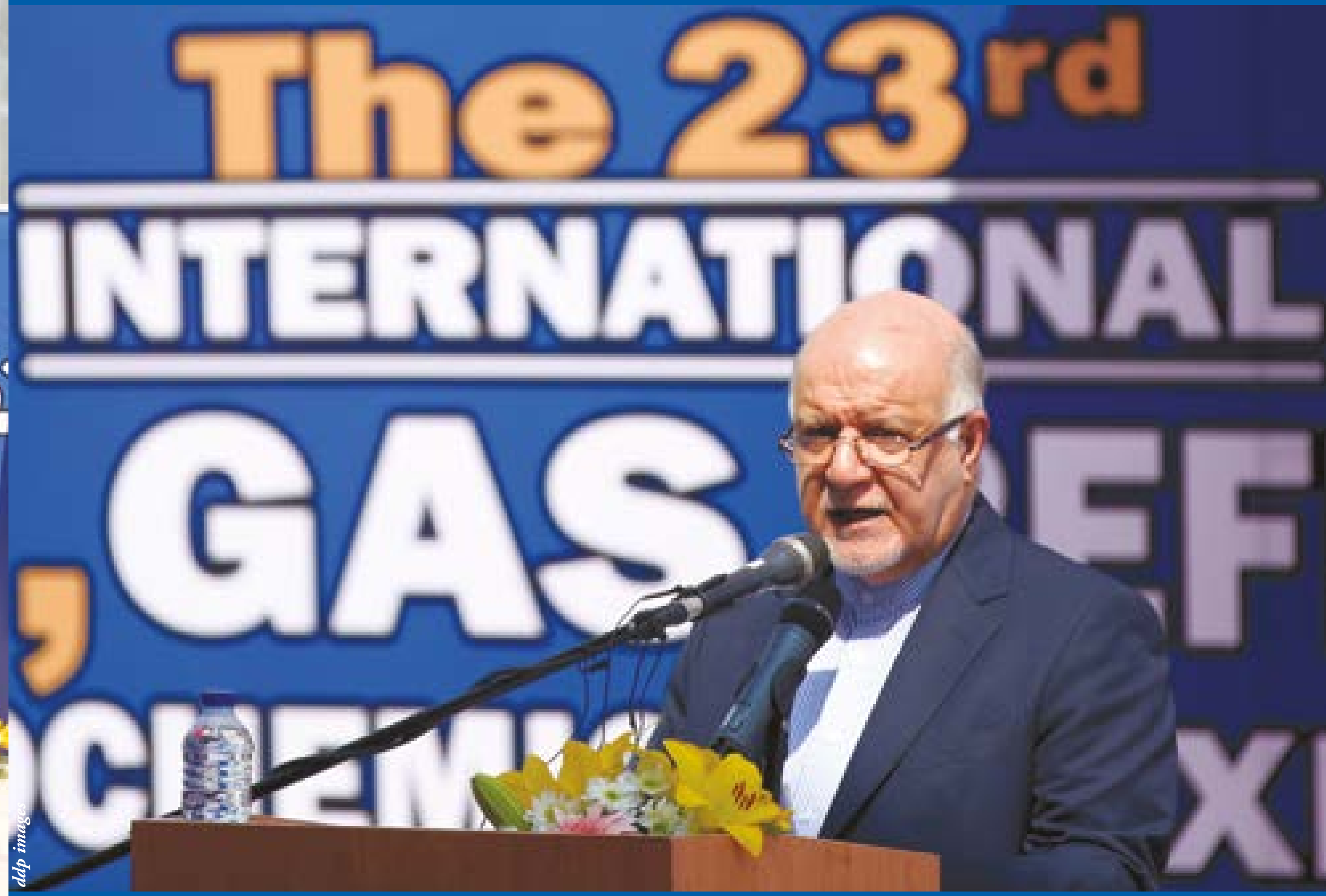
- He is routinely named on international power lists, including the Time 100 World's Most Influential People; The Times GulfPower25; and The World's 50 Most Influential Arabs.

- In 2006, at the request of the King, Al-Naimi led the development of King Abdullah University of Science and Technology, the international graduate teaching and research institution where he remains as chair the Board of Trustees.

‘Made in Iran’:
IR Iran petroleum industry seeking self-sufficiency

During a rousing speech for the opening session of the 23rd Iran International Oil and Gas and Petrochemical Exhibition (Iran Oil Show 2018), IR Iran’s Minister of Petroleum, Bijan Namdar Zanganeh, *emphasized the strengths of the country’s local goods and products in the oil industry — an essential part of the Ministry’s current focus.*

By Maureen MacNeill from Tehran



Bijan Namdar Zanganeh, IR Iran's Minister of Petroleum.

The four-day Iran Oil Show, sponsored by the Iranian Ministry of Petroleum and its subsidiary the National Iranian Oil Company, attracted a total of 4,000 Iranian and foreign international companies from 38 foreign countries, which packed the Tehran fairground from May 6–9 in Tehran.

Manager of the exhibition, Mohammad Naseri, told the *OPEC Bulletin* that there is always a huge demand for booths in the oil show. So much so that even if it were two times bigger, the space would be filled. "We could not give space to around 700 applicants," he said.

However, the well-known and important companies were in attendance, he said. "The ones that we would potentially have business with."

The new contractual framework known as Iran Petroleum Contracts (IPC) is an additional attraction for the exhibition, said Naseri. "It has a target, a purpose. It's not random."

The new contractual framework has been welcomed by almost all well-known international companies, he added, stating many came to the exhibition this year to start negotiations and have submitted signed proposals. "They prefer it over the old (buyback) contract.

"Another advantage of attendance here is that one can find local subcontractors; there is more technical interaction between small private Iranian companies and major companies. So we are trying to facilitate these kinds of contacts."

The halls were organized differently this year, he added, stating that Iranian exploration and production (E&P) companies are featured in the main hall, along with the National Iranian Oil Company (NIOC). "The OPEC Secretariat is also here (in the main hall) where the most reputed Iranian companies are," said Naseri.

Foreign companies, refiners and petrochemical companies, along with local producers of equipment and exporters of products were each together in their own hall/s, he added.

Mohammad Naseri (l), Manager of the 23rd Iran International Oil and Gas and Petrochemical Exhibition, with the OPEC Bulletin's Maureen MacNeill.

Ali Kardor, CEO of the National Iranian Oil Company (NIOC).

"There are lots of downstream companies — refineries, petchems, power plants, and also small local companies that export their products to other countries."

Iran's Minister of Petroleum, Bijan Namdar Zanganeh, said in his opening remarks that locally manufactured goods and products in the oil industry can be the pioneers of a resilient economy in IR Iran if helped and assisted. "This Ministry will create job opportunities which are essential for the economy and the whole country."

He continued to discuss various projects undertaken by Iranian contractors in the country, while adding that there is still a need for technical assistance and investment by foreign companies. "More than $20 billion is needed in investment. A big part should come from foreign investment." The oil industry should be "more active," he added.

In terms of achievements, six phases of South Pars will be finalized this and next year, he stated, and four phases are in the final stage of production. In terms of products, the Minister said that there was a 25 per cent increase in the production of gasoline compared with the previous year, at which time he urged Iranian people and companies to try to be more efficient in their gas consumption so that the country can be more self-sufficient.

Four onshore treatment facilities with a total processing capacity of over 100 million cubic metres per day of gas recovered from South Pars are slated to come on-stream this calendar year which began on March 21, he said.

During the ceremony, the Minister said that Tehran prefers a 'reasonable' price for crude oil, in an effort to avoid market instability. "The oil price should not be such that the oil market would regularly see volatility."

Made in Iran

Try to work together with Iranian builders and manufacturers, was Minister Zanganeh's message to foreign companies.

There are several new elements to the IPC model of contract recently adopted by the country which support Iranian companies, he added. Each contract with a foreign partner includes the requirement to work together with an Iranian partner. "It is a must to transfer technology to them."

Zanganeh stated during the exhibition that Iranian manufacturers can supply up to 65 per cent of the equipment used to build a refinery.

At a press conference, Ali Kardor, CEO of the National Iranian Oil Company, said that the IPC contracts are meant to be long term, around 20 years, and unlike in the past, Iranian companies will closely work alongside foreign partners. He added that the average cost of oil production in IR Iran is among the lowest in the region.

Gholam Reza Manouchehri, Deputy CEO of NIOC.

Visitors at the NIOC stand.

"Foreign companies are working better with us … negotiations are getting better. They are getting more familiar with the way we work."

Under the new contractual framework, 51 per cent of a contract must be Iranian made, according to Gholam Reza Manouchehri, Deputy CEO of NIOC for Development and Engineering. There are 17 Iranian companies chosen for E&P work, and foreign companies must work with one of them under the contract.

The National Iranian Drilling Company (NIDC) preferentially chooses locally manufactured equipment, according to its CEO, Sepehr Sepehri. He stated at the Oil Show that NIDC was choosing locally made commodities in line with Supreme Leader Ayatollah Ali Khameni's call for support for "Made in Iran" products.

Oil production

In an exclusive interview with the *OPEC Bulletin,* Manouchehri stated there are major activities underway, such as sustaining production projects in brown fields through engineering, procurement and construction (EPC) contracts, which are financed by NIOC in over 30 fields, and include wells, pipelines, surface facilities and sea facilities; this will produce about 400,000 barrels/day, part of which will replace natural decline rate and part of which will be new production.

Two major issues include new technology for enhanced oil recovery (EOR) and improved oil recovery (IOR), and foreign investment, he said. In the area of EOR/IOR, the first concern is sea water injection; a 100–150 kilometres pipeline to the sea is needed. Foreseen is $20bn of investment each year for five years under the country's 6th Development Plan.

At a press conference on the sidelines of the exhibition, Kardor stated that IR Iran's crude exports in April broke a record at 2.118 million b/d of oil, and that the country also started exporting Pars Oil on global markets during the month.

He stated the country's crude oil production capacity is 4m b/d, and on average about 3.9m b/d was produced during the previous calendar year.

The country has the potential to increase its oil production to 4.5m b/d said Kardor, by adjusting some of its installations. Most of IR Iran's oil production growth came from the West Karoon oil fields, shared with neighbouring Iraq.

He said 17 oil fields are ready for tender and joint venture with international oil companies (IOCs). In some of these fields universities work together with industry helping in research and development, he added.

"However, we do need to work with international advisors to take benefit from their ideas, technology and expertise." He added that the investment style in IR Iran emphasizes diversifying sources of finance and

View of one of the halls at the exhibition.

Mohammad Meshkinfam, CEO of Pars Oil and Gas Company (POGC).

procures four per cent of the services and materials from small cities and villages adjacent to an operation site.

Gas aspirations

During the opening ceremony, Minister Zangeneh stated that a huge project to supply natural gas to Iranian households has made great leaps and bounds, branching out to 11,000 villages and three million households in the country, thus 99 per cent of the population is covered by the gas network.

He stated that the country has the world's largest natural gas reserves, but that exports will only be considered after domestic demand is met.

The CEO of Pars Oil and Gas Company (POGC), Mohammad Meshkinfam, said at a press conference and in an exclusive interview with the *OPEC Bulletin* that roughly 1.24bn cu m of natural gas has been recovered from the joint South Pars gas field over the course of the previous Iranian calendar year, ending March 20.

He added that POGC is planning to launch five offshore platforms in the first half of the calendar year at South Pars.

Manouchehri said that IR Iran's gas condensate production is set to increase by 200,000 b/d after new phases of the huge South Pars gas field become operational.

The remaining phases of the field, except Phase 11 and part of Phase 14, will be fully developed by the end of the current calendar year in March 2019, he said.

The CEO of the National Iranian Gas Company (NIGC) said that it is planning to bring the country's natural gas exports to 200m cu m/d by 2021 from the 60m cu m/d currently produced. IR Iran's neighbours are the current priority regarding gas exports, thus gas pipelines and LNG shipments are under consideration.

Hamid Reza Araghi, Deputy Minister and Managing Director of NIGC talked at a press conference about the latest development in the gas sector, saying that last year 212bn cu m of gas was produced, 203bn cu m of which was used for internal consumption. According to the country's Sixth Five-Year Development Plan, 200m cu m/d should be exported. Some gas is already being exported to Turkey, and plans are underway to export gas to Iraq, Armenia, Azerbaijan Republic, Oman and Pakistan.

Foreign exhibition attendees

There was a lot of positive sentiment from foreign companies throughout the event.

Many MOUs were signed, both between domestic firms and national companies, according to Naseri. Some of these have been turned into IPC contracts and some more will be completed this year. The Iranian Offshore

Hamid Reza Araghi, Deputy Minister and Managing Director of NIGC.

Agnès Bayol (r), Oil and Gas Project Manager, and Hasan Naderi Mahabadi for Business France, at the French pavilion.

Engineering and Construction Company (IOEC) signed letters of intent worth up to $500m with foreign financing firms.

The French pavilion has been at the Oil and Gas Show since 2015, said Agnès Bayol, Oil and Gas Project Manager for Business France, which represents the pavilion. She added despite only recent attendance of the pavilion, French companies have a much longer history with IR Iran. "There's a very good relationship between Iran and the French, and it's getting better."

The first year the pavilion was at the exhibition, 15 companies attended, the next year 25 and the following year 30. This year there are 31, but Bayol estimates that up to 50 French companies including those at the pavilion are at the exhibition.

The first year the pavilion came, companies came to learn about IR Iran, and for the second and third years to measure the potential, she said. "This year we have companies who have partners in IR Iran."

Bayol added the philosophy behind joining the pavilion is supporting each other, sharing partners and know-how and improving visibility. "There are more synergies."

The businesses attending include mostly equipment manufacturers, some service providers and some engineers, she said. "You need good know-how to do business. Our companies are pretty aware; they focus a lot on research and development and can propose solutions. Many small companies work in a specialized area."

Local participation is important in IR Iran, she added. "The companies which come here are well aware. They know they cannot just sell equipment, which they must find a partner here, for example, for assembly. They know this well and agree; many are here with this issue in mind."

Matthias Rüdiger of Germany's Samson said business has been running well in IR Iran. Localization is increasing in the country, he added. In principal, his company prefers to be where the customers are, he said. He predicts in the longer future it may be harder to get contracts when local companies are able to compete.

The company — which works with different kinds of wells, products and solutions, and which is internationally rated No 4 in its field — now has a legal entity in IR Iran, has rented a space and is ready to open operations within four weeks. "Sampson Pars is operating here. It is 100 per cent a subsidiary of Germany.

"European companies have to follow European rules. As long as we are allowed to do business here, we will do.

"I've been travelling here for ten years. People are used to this … We have commitments to customers and businesses here. The company has been here for 40 years. It's our nature. We cannot easily say goodbye."

Thinking local

Hamidreza Mehrbod (l), in Business Development Management at Petropars.

Fire related equipment on display at the exhibition.

The Industrial Development and Renovation Organization of Iran (IDRO) has been around more than 50 years, said Mohsen Farmani, Head of the General Contractors Development office. The organization — which is under the supervision of the industry ministry — invests, creates, leads and trains.

It is a development organization intended to build the infrastructure for new industry in the country, said Farmani. "Although it's executing many big infrastructure projects, it also invests in oil and gas, refineries, high tech, ship building and railways.

"About 40 per cent of our work is connected to the oil and gas industry," said Farmani. The organization is involved as a contractor, leading projects, especially through the bidding stage.

Local manufacturing of key equipment in the oil and gas industry is one of the major areas IDRO is involved in, he said.

"In the past, more than 130 companies were subsidiaries. Now many are transferred to the private sector, which is a mandatory government rule," thus about 40 companies come under the organization's banner, he said.

"Privatization is a rule for IDRO. It's a rule that it must create and operate a company, then after about three years transfer it to the private sector," thus empowering the private sector and developing industry in the country. When asked what services the organization provides, he said: "There is technology transfer, training, management services, consultancy, business networking."

Some of the oil and gas vendors on the NIOC vendor list are former companies, added Farmani. "Anyone can start a company, but they start with IDRO because of the advantages it offers."

IOEC

Technical head at Iran Offshore Engineering and Construction Company (IOEC), Farid Faroutan, stated that IOEC is a large holding representing drilling, big vessels, lifting and offshore work, including managing on and offshore rigs.

The company was one of those recently qualified by the NIOC to be listed as an exploration and production (E&P) company allowed to take contracts with foreign companies.

"IOEC is private, but our main projects are for NIOC. We can go under IPC contracts, we are on the list," he said, adding the country works together with both Iranian and foreign companies. IOEC tenders documents and chooses companies based on commercial and technical proposals.

They invite companies to work with them which are on the Approved Vendor List, qualified by NIOC. There are future joint ventures for technology transfer and financing in the planning, he said.

Faroutan added that Iranian technology is growing and many more companies manufacture their own parts. IOEC uses a mix of Iranian and foreign parts, he added.

"There is no regulation about how much we must use, but there is promotion, better conditions supported by the government for local use," he said.

Petropars

Hamidreza Mehrbod, in Business Development Management at Petropars, said during a visit to the company's booth that Petropars comes under the broader umbrella of NIOC, under which Naftiran Intertrade Co (NICO) is positioned, below which comes Petropars and other companies. Petropars develops and manages gas fields, he said, adding the company started in 1996.

Calling itself the 'best local E&P' company, it deals with refineries, seismic work, drilling and completion, sea lines, offshore and onshore facilities project management, according to a brochure. It was ranked first among local E&P companies in accordance with NIOC criteria in 2016. It concentrates on the upstream, while diversifying its business portfolio through new opportunities in the oil and gas chain.

Its vision is to become an international E&P company focusing on oil and gas fields in IR Iran, Africa and South America, as well as neighbouring countries. "We want to develop and master huge megaprojects," said Mehrbod, adding the company is in the process of being privatized after South Pars Phase 11 is completed.

Petropars has, in turn, subsidiaries under its umbrella specializing in various upstream areas. It has been involved in both buyback and EPC contracts in South Pars, including Phases 1, 4 and 5, 6, 7, and 8, 12 and 19. The company is also examining some MOUs for EPCF and IPC contracts, and has its eye on eight potential projects.

As an example of its size, for Phase 12 (ongoing) it has been the sole contractor, while other phases were undertaken with both local and foreign companies. The company had up to 17,000 employees in the peak execution stage of Phase 12 and managed 560 domestic and foreign contractors who provided equipment.

Oil industry equipment on display at the exhibition.

Petropars has the capacity to manage projects without foreign companies, said Mehrbod, pointing out Phase 12 work. The financing attached to capital and technology transfer associated with foreign companies is a big bonus, however. For example, for Phase 11 of South Pars, foreign partners had 80 per cent of the project and thus covered 80 per cent of the capital and operating costs.

The upcoming workforce

An excited and enthusiastic group of youths were at the stand of the Iran Oil Industry World Petroleum Council

Visiting the stand of the Gas Exporting Countries Forum (GECF) are (l–r): Jenabi Ehsan, NIOC; Maureen MacNeill, OPEC Bulletin; Yury Sentyurin, GECF Secretary General; and Dr Mohammad Taeb, Acting General Manager & National Representative to OPEC & GECF at IR Iran's Ministry of Petroleum.

An excited and enthusiastic group of youths were at the stand of the Iran Oil Industry World Petroleum Council (WPC) Youth Committee, which was set up in 2014 under the umbrella of the WPC.

Youth Committee, which was set up in 2014 under the umbrella of the World Petroleum Council (WPC). With 1,400 members, it's the biggest community of youth members in the WPC, said Dr Sajjad Keshavarzian, Coordinator of International Collaboration.

It gained its large membership through social media and talks at universities around Iran, he said. "We try to tell students that this can help them in their career."

A mentorship programme can help bridge generation gaps, he said, adding there are also gap researchers looking for answers to particular issues. "It's a great motivation to work with senior people and young professional committees. Some are already managers supporting programmes. It's a good life skill for the young generation."

"The mentors make us stronger in making decisions. They give us responsibilities," said Ali Rahneshin, a student member. "We are thinking of programmes for schools to avoid gaps. We also think about sustainable development and ecological industries.

"The oil industry is relying on us. They ask us if we know someone who can do financing or other specific things. It's a good network."

Additionally, there is an international collaboration team which tries to connect with different companies and universities in Europe. "We have Iranians studying there, they help to make the link. Of the 1,400 members, about 100 are studying abroad, which helps us a lot," said Keshavarzian.

There is a congress event every two years, at which WPC youths from 70 countries join together. They talk about topics relating to the oil and gas industry, from drilling and geology to sustainable development, how to retain talented people and the energy transformation, he said. Additionally subjects like zero flaring, integrated project management, and much more are discussed.

Another main goal is to empower women in the industry and we ask that they be involved in all activities, stated Rahneshin. "We have a special team for women in Iran. There are 120 at least."

The group receives support from both the government and private sector; the Petroleum Ministry pays for some trips and facilitates meetings.

OPEC active at IR Iran Oil and Gas Show

For the fifth year in a row, OPEC had a booth at the IR Iran Oil and Gas Show, this time next to the National Iranian Oil Company at the entrance of the main hall, where the most reputed Iranian companies were located.

The booth received many visitors over the course of the four-day event, and OPEC materials were distributed and questions answered.

The booth was visited by regular Iranian people wanting to know about their country's participation in OPEC, along with specialized experts from various universities and industry backgrounds. Many questions were asked about recent topics, such as the 'Declaration of Cooperation' between OPEC and non-OPEC countries, and details of the market situation were clarified.

The interest in OPEC and its work led to a large crowd visiting the booth. Attendees were keenly interested in all information provided.

OPEC presentation

Additionally, OPEC held a special event at the 2018 Iran Oil and Gas Show for the first time — a presentation of the *OPEC World Oil Outlook,* updated with new monthly data.

Abderrezak Benyoucef, Head of OPEC's Energy Studies Department, made the presentation to a crowded press conference room, while OPEC colleague Erfan Vafaiefard supported him with Farsi translation.

The updated conformity figure with the 'Declaration of Cooperation' between OPEC and non-OPEC countries was presented, along with a listing of the current status of oil in storage in relation to the five-year average.

Benyoucef presented figures on the supply/demand balance, world GDP growth, non-OPEC production, long-term demographic changes and the future outlook to 2040. The *Reference Case,* which lays out future scenarios for demand growth, including a breakdown for demand growth in relation to different energy types, the supply outlook, and regional changes, was also presented.

During the following question and answer session, the difference between OPEC and the International Energy Agency (IEA) outlooks was also discussed, and questions about the future of tight oil were addressed.

There was positive feedback to the event, with several people approaching OPEC experts at the booth afterwards to discuss the information presented in more detail.

Members of the Iran's Ministry of Petroleum and NIOC during a visit to the OPEC stand.

Abderrezak Benyoucef (l), Head of OPEC's Energy Studies Department, made a special presentation of the OPEC World Oil Outlook, updated with new monthly data at the 2018 Iran Oil and Gas Show for the first time. He was supported by OPEC colleague Erfan Vafaiefard (c).

Sasan B Soofi, Manager of Museums for Khuzestan province, shows the stand of the Tehran Petroleum Museum at the 23rd Iran International Oil and Gas and Petrochemical Exhibition.

Iran Petroleum Museums preserving oil history

The philosophy behind establishment of IR Iran's oil industry museums is attempting to restore, preserve and display the handwritten scripts, objects, devices and/or equipment left from long time ago and providing an opportunity for the nation to feel the trend of developments in the industry.

By Maureen MacNeill from Tehran

Undoubtedly, the role of the oil industry in the country's political, social and economic developments has reinforced the idea of oil industry museums in a bid to reflect an important and effective part of IR Iran's history for visitors.

For years, the historical remnants of a more than 100-year oil industry sat either rusting or slowly being destroyed throughout IR Iran. In an effort to preserve what is left, measures have been taken to establish museums in Masjed Soleyman, Abadan, Kermanshah and Tehran.

Minister of Petroleum, Bijan Namdar Zanganeh, had the idea in mind about the museums about ten years ago already, says Sasan B Soofi, manager of museums for Khuzestan province. Prior to that, nobody had even thought of it.

But about three or four years ago, the value of these archival items was finally recognized, and they are now in the process of being collected, preserved and displayed in several museums blossoming across the country. To date, there are approximately 20 museums, and more are planned to be established.

Hoshang Entezami, an old veteran of the oil industry in IR Iran, one of the first Iranians to work on an offshore platform, which was run by Italians at the time.

One of the main areas of focus is the city of Abadan in Khuzestan Province, southern IR Iran, says Soofi. Twenty-three more possible sites in the city are slated to become museums. One is open, the second is almost ready, and the third is expected to be open at the end of the year, he says.

"The city itself could be a museum," says Soofi. "It carries memories of more than 100 years — it was the oil city."

One hundred years ago, Abadan was nothing — just a village of 60 or 65 people, says Soofi. Then a refinery was built and people came in relation to the refinery.

When the British came to the area a century ago to explore and produce oil, they wanted their own products — eggs, meat, etc — thus they made a dairy farm. All of these buildings still exist, said Akbar Nematollahi, the Director of Petroleum Museums and Documents.

"To build a factory, they brought Indians here, they carved wood in the different sections of the factory. We have all of the molds, nobody else has them. Most of these are in Abadan," he says.

British Petroleum was the first company to come to IR Iran and search for oil, says Nematollahi. The first consulate of the British Empire was in Kerman Province, and a man called William Knox Darcy was the main British character involved at that time.

Over 100 year ago, British prospectors started looking for oil in southern IR Iran and ended up in Masjed Soleyman, where first oil was eventually found, and which became the site of the country's first oil well. There was a 4 am telegram sent to Darcy, announcing first oil, says Nematollahi.

As production expanded, the oil was transferred to Abadan Refinery and shipped to England. A pipeline from Masjed Soleyman to Abadan was built in 1907, the year oil was discovered.

The first oil company to be created was the Anglo-Persian Oil Company, which was involved in drilling oil wells, refining and transporting the oil.

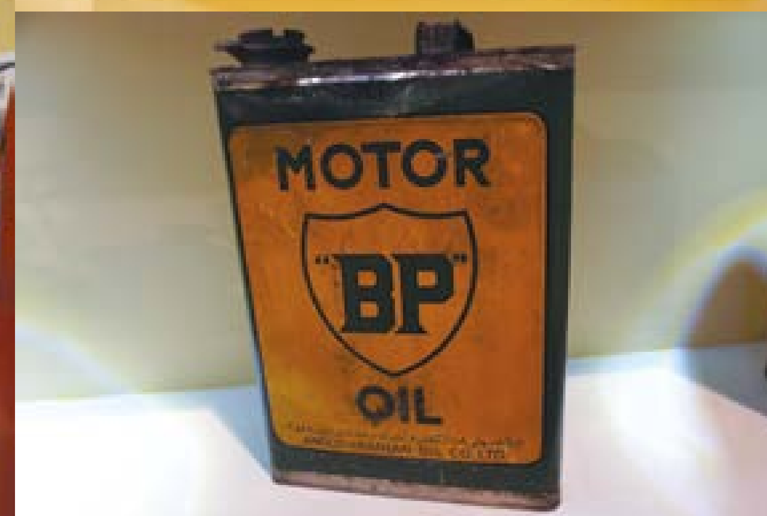
"The Brits were mostly here until the oil nationalization movement around 68 years ago," says Soofi, thus most of the elements in the museums are in English. Later on, the US, Japan and Germany appeared on the scene.

Document preservation

Over the past three years, the organizers of the museums project have so far found seven million documents, of which one million have been reviewed, separated, protected and treated using a gel vacuum machine says Nematollahi. As for objects, 6,000 pieces have so far been found around IR Iran dating back to the time oil industry activities commenced in the country, and "there are more to find," he says.

Historic documents on display at the stand of Iran's Petroleum Museum.

Various exhibition pieces on disaplay at the museum stand.



"We are eager to negotiate with museums around the world. We would like to exchange views and objects."

Nematollahi provided the initial impulse to start the museums when he was in the Ministry's Public Relations Department, states Soofi. He raised the issue and Minister Zanganeh supported the idea.

"He said we need museums to preserve materials and to protect documents, moreover there are lots of old buildings that we need to save. Thus, Zanganeh agreed with the idea of establishing oil museums, and instructed the relevant division to allocate a budget for accomplishing the job three years ago."

There are lots of top experts at the museums, responsible for finding various objects, he says. They travel around the country, and when they find an object they notify the museum authorities, he adds.

"We check if they are suitable for the museums or not, we recover them, and then send them to different museums.

"We preserve this valuable heritage for the next generations," says Soofi.

"This is our future, for our children to know what we had, what happened in this country. We have to keep museums, they are so important. They inform our nation about the developments and the history of the industry."

Old timer

In a stroke of fortuitous timing, just as the OPEC team was visiting the museums' booth at the Oil and Gas Show, Hoshang Entezami showed up. An old veteran of the oil industry in IR Iran, Entezami was one of the first Iranians to work on an offshore platform, which was run by Italians at the time.

"I was the only Iranian worker on the platform," says Entezami , who was born in 1927. "It was with Eni in the Nourous region. It was the first oil drilling offshore, he says with pride.

At the age of 25 or 26, he was assigned to study in an Italian school for two years to learn the language, enabling him to work as a geologist on the platform.

Establishment of oil industry museums is an initiative which can keep the oil industry alive and a tool to provide the nation with information on the developments of the one-century-old industry, which is a part of the country's brilliant history.

7th OPEC International Seminar
Vienna, Austria

OPEC Seminar: Petroleum — cooperation for a sustainable future

The oil industry is by turns challenging, stimulating, exciting and exacerbating. Industry veterans have made a lifetime out of knowing how to read between the lines of market information and putting it into historical context. Most will say they love the industry, its ups and downs, its surprises.

The Hofburg entrance to the exhibition.

The collective knowledge of the industry's finest who will be in attendance at the 7th OPEC International Seminar, held from June 20–21 at the grandiose Hofburg Palace in Vienna, is staggering. To have all of these outstanding individuals in one place — where they can debate, discuss and deliberate — makes the Seminar one of the premier events on the world energy calendar.

The world's most powerful oil ministers, from both OPEC and non-OPEC countries, the CEOs of the biggest oil companies, heads of international organizations, country leaders, academics and analysts will gather together for two days to debate the most pressing subjects facing the oil industry today.

The theme title of the 7th OPEC International Seminar, is very apt given the conditions facing the world today and particularly the oil market, *'Petroleum — cooperation for a sustainable future'*. Recent buzz words of our time have become 'sustainable development', 'energy transition', 'climate change' and 'environment'. These are massive issues facing mankind, which must be faced head on. The oil industry is also facing rapid changes in light of these issues, and these need to be addressed on an ongoing basis in international fora such as the Seminar.

Day 1

On day one, the opening of the OPEC International Seminar exhibition will take place with two long-time professionals, John Defterios from CNN and Eithne Treanor of E Treanor Media, while there will be scene-setting talks by Meghan O'Sullivan from Harvard University. Next OPEC Secretary General, Mohammad Sanusi Barkino, will deliver opening talks. Karin Kneissl, Minister, Federal Ministry for Europe, Integration and Foreign Affairs, Republic of Austria, will take the podium next to deliver remarks on behalf of the Austrian Government. Finally, Suhail Mohamed Al Mazrouei, Minister of Energy and Industry of the United Arab Emirates, and President of the OPEC Conference, will be invited to deliver a keynote address.

The rest of the two-day programme will consist of five panel sessions with keynote speakers and panelists and include a Q&A opportunity at the end of each.

The **introductory session** focuses on *'Sustainable global energy future',* which was a much-discussed topic recently at the International Energy Forum's (IEF) 16th meeting in New Dehli, India in April. The India meeting focused on how global shifts, transition policies and new technologies affect market stability, as well as future

View of the 6th OPEC International Seminar in June 2015.

investments and trade patterns in the energy sector. It was stated that energy security is a common challenge for all, which requires international cooperation, along with technology and innovation. This discussion will be furthered at the Seminar.

This session includes several prominent keynote speakers: Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources, Kingdom of Saudi Arabia; Alexander V Novak, Minister of Energy, The Russian Federation; Mohammed bin Hamad Al-Rumhy, Minister of Oil and Gas, Sultanate of Oman *(invited to speak);* Shri Dharmendra Pradhan, Minister of Petroleum and Natural Gas, India; and Sultan Ahmed Al Jaber, UAE Minister of State, Group CEO, Abu Dhabi National Oil Company (ADNOC).

In addition, top panelists from the industry include: Daniel Yergin, Vice Chairman, IHS Markit Inc; Bob Dudley, Group Chief Executive, BP; Patrick Pouyanné, Chairman and CEO, Total; Claudio Descalzi, CEO, Eni; and Scott D Sheffield, Executive Chairman of the Board, Pioneer Natural Resources.

After the scene has been set by these leaders of the industry, **Session I** on *'Energy cooperation'* will follow. This will include as keynote speakers Eng Bijan Namdar Zanganeh, Minister of Petroleum, Islamic Republic of Iran; Emmanuel Ibe Kachikwu, Minister of State for Petroleum Resources, Nigeria; HRH Prince Abdulaziz Bin Salman Bin Abdulaziz Al Saud, Minister of State for Energy Affairs, Kingdom of Saudi Arabia; Li Ye, Executive Director General for Regulation, National Energy Administration, China; and Sun Xiansheng, Secretary General, International Energy Forum (IEF).

Meanwhile, panelists will include Musabbeh Al Kaabi, CEO, Mubadala Petroleum & Petrochemicals; Edward L Morse, Managing Director and Global Head, Commodities Research, Citigroup; Sarah Ladislaw, Director and Senior Fellow, Energy and National Security Program, CSIS; Isam Al Zadjali, CEO, Oman Oil Company; Helima Croft, Global Head of Commodity Strategy, RBC Capital Markets; and Gati Al-Jebouri, Managing Director, LUKOIL Mid East Ltd.

Important to note in this context is that since the last Seminar the historic 'Declaration of Cooperation' — voluntarily entered into by 24 countries on December 10, 2016 — rescued the oil industry from its worst downturn and has fundamentally changed the energy landscape. Bringing together 24 sovereign producing nations is unparalleled in the history of the oil industry. The enhanced relations between participating countries now constitute a fundamental and essential feature of the 'new world of energy.' It has evolved into a broader continuity partnership that can work for everyone, across all timeframes, to help deliver the sustainable market stability all desire. Two special guests will speak at the lunch session: Emmanuel Ibe Kachikwu, Minister of State for Petroleum Resources, Nigeria; and Fatih Birol, Executive Director, International Energy Agency (IEA).

Session II: *'Technology breakthroughs'* invites the thoughts of panelists Daniel Yergin, Vice Chairman, IHS Markit Inc; Ihsan Ismaeel Al-Saade, Dirctor General of Basrah Oil Company, Iraq; Lorenzo Simonelli, CEO, Baker Hughes, a GE company; Al Cook, Executive Vice President, Equinor ASA; Pacelli Zitha, Faculty of Civil Engineering and Geosciences, Delft University of Technology; and Duco Drenth, Director, New Technologies, Dietsmann.

Technological breakthroughs have been the main reason that shale oil has been so successful to date. The many challenges facing the planet, including climate change and the energy transition, will require technology to ensure energy security and a smooth transition.

After this, a **special session** will be held on *'Global oil market balance metrics'* with Aziz Yahyai, Research Division, OPEC Secretariat; Edward L Morse, Managing Director and Global Head, Commodities Research, Citigroup; Bassam Fattouh, Director, Oxford Institute for Energy Studies; Adam Sieminski, President, King Abdullah Petroleum Studies and Research Center (KAPSARC); Roger Diwan, Vice President, IHS Markit; Ann-Louise Hittle, Vice President Oils Research, Wood Mackenzie; Amrita Sen, Chief Oil Analyst, Energy Aspects Ltd; and Johannes Benigni, JBC Energy.

Session III: *'Energy transition'* will address a much-discussed topic at the moment. The energy transition is an evolving continuous process that inevitably reflects global shifts in energy demand and supply, new trade patterns and routes, and embraces a number of key issues such as sustainable and secure energy market development, fast-adapting energy policies, investment cycles, and technology pathways. It influences directly the energy dialogue and cooperation imperative due to its inherent complex, interdependent, and global nature.

The energy transition addresses different dimensions of energy challenges: environment and climate change, sustainable development goals and energy policy directions, and the role of technology and innovation in fast-evolving global energy requirements. As an ongoing long-term process, the transformation and expansion of the energy mix reflects moving away from energy poverty and towards increased access to affordable, reliable, sustainable and modern energy for all.

This session will include as keynote speakers Jabbar Ali Hussein Al-Luiebi, Minister of Oil, Iraq; Gabriel Mbaga Obiang Lima, Minister of Industry, Mines & Energy, Equatorial Guinea; Carlos Pérez, Minister of Hydrocarbons, Ecuador; Pascal Houangni Ambouroue, Minister of Petroleum and Hydrocarbons, Gabon; Ezekiel Lol Gatkuoth, Minister of Petroleum and Mining, Republic of South Sudan; UN represented by Patricia Espinosa, Executive Secretary, UNFCCC; and Yury Sentyurin, Secretary General, GECF.

Additional panelists include: Suleiman Jasir

Delegates attending the 6th OPEC International Seminar in June 2015.

Al-Herbish, Director-General, OFID; Adnan Shihab-Eldin, General Director, Kuwait Foundation for Advancement of Sciences; Václav Smil, Distinguished Professor Emeritus, University of Manitoba; Courtney Fingar, Editor-in-Chief, fDi Magazine, Financial Times; Amrita Sen, Chief Oil Analyst, Energy Aspects Ltd; Carlos Saturnino, CEO, Sonangol; and Megan Richards, Director of Energy Policy in DG Energy (ENER), European Commission.

The end of the first day will include a wrap up, along with a ministerial welcome reception and gala dinner at the famous historical Vienna City Hall. This will include elaborate entertainment for esteemed guests of the Seminar, as well as the ceremonial presentation of the prestigious OPEC Journalism and Research awards.

Day 2

The programme for Day 2 includes an **opening session** on *'Global oil future challenges',* and includes: Amin H Nasser, President and CEO, Saudi Aramco; Andrew Gould, Former CEO, Schlumberger; John Hess, CEO, Hess Corporation; Jay R Pryor, Vice President, Business Development, Chevron; Sergey Vakulenko, Head of Strategy and Innovations, Gazprom Neft; Daniel Yergin, Vice Chairman, IHS Markit Inc; and Jubril Adewale Tinubu, Group Chief Executive, Oando PLC.

This will be followed by **Session IV**: 'Investment in the oil industry', which will include keynote speakers Jabbar Ali Hussein Al-Luiebi, Minister of Oil, Iraq; Bakheet S Al-Rashidi, Minister of Oil and Minister of Electricity & Water, Kuwait; Mustapha Guitouni, Minister of Energy, Algeria; Shaikh Mohammed bin Khalifa Al Khalifa, Minister of Oil, Kingdom of Bahrain; Aldo Flores-Quiroga, Deputy Secretary of Energy for Hydrocarbons, Mexico; Magzum Mirzagaliyev, Vice-Minister of Energy, Kazakhstan; and Mustafa Sanalla, Chairman of the Board of Directors, National Oil Corporation (NOC), Libya.

Other panelists include: M. K. Baru, Group Managing Director, Nigerian National Petroleum Corporation (NNPC); Rainer Seele, CEO, OMV; Majid Jafar, CEO, Crescent Petroleum; Carlos Tejada, CEO, Petroecuador; Helima Croft, Global Head of Commodity Strategy, RBC Capital Markets; and Christof Ruhl, Global Head of Research, Abu Dhabi Investment Authority.

This topic is indeed currently a cause for concern. As OPEC Secretary General Mohammad Sanusi Barkindo said in a recent speech in Azerbeijan: "One of the greatest and most pressing challenges before us is ensuring that there will be adequate levels of investment in a predictable fashion to meet the world's future requirements … So far in 2018, the pace of investment has gradually picked up, yet we are still not seeing enough robust investment in long-cycle projects, which are the baseload of future supply, and the foundation of this industry's future."

In the period to 2040, the required global oil sector investment is estimated at $10.5 trillion to meet future world oil demand that is expected to surpass 111 million barrels/day by 2040, he said. This represents a staggering increase of 16m b/d. Indeed, the world will attain the 100m b/d level of consumption much sooner than projected.

"This is a clarion wake-up call that every effort should be made to avoid a potential supply gap that could present a serious challenge to the industry in the medium to long term," said the Secretary General.

Finally, the last session features a broader perspective, **Session V**: *'World economy and future of oil',* and includes as keynote speakers Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources, Kingdom of Saudi Arabia; Mohammed Bin Saleh Al-Sada, Minister of Energy and Industry, Qatar; Manuel Salvador Quevedo Fernández, Minister of Petroleum, Venezuela; Emmanuel Ibe Kachikwu, Minister of State for Petroleum Resources, Nigeria; Parviz Shahbazov, Minister of Energy, Azerbaijan; and Mohammed bin Hamad Al-Rumhy, Minister of Oil and Gas, Sultanate of Oman *(invited)*.

Panelists include Urban Rusnák, Secretary General, Energy Charter Secretariat; Darcy Spady, 2018 SPE President; Pratima Rangarajan, CEO, OGCI Climate Investments; Adam Sieminski, President, King Abdullah Petroleum Studies and Research Center (KAPSARC); Bassam Fattouh, Director, Oxford Institute for Energy Studies; Tope Shonubi, Executive Director, Sahara Group; and Christyan F N Malek, Managing Director, Head of EMEA Oil & Gas Research, Global Energy, J P Morgan Ltd.

Meghan O'Sullivan, Harvard University, will close the scene. Following this, a vote of thanks will be given by Mohammad Sanusi Barkindo, Secretary General, OPEC, and closing remarks will be held by Suhail Mohamed Al Mazrouei, Minister of Energy and Industry, United Arab Emirates, and President of the OPEC Conference.

Ilham Aliyev, President of the Republic of Azerbaijan.

Looking beyond the short term: cooperation and innovation

On May 30, 2018, OPEC Secretary General, ***Mohammad Sanusi Barkindo****, was a featured speaker at the 25th International Caspian Oil and Gas exhibition and conference in Baku, Azerbaijan. Under the theme 'Cooperation and innovation as the key factors of a sustainable future,' one of the Caspian region's leading oil and gas events attracted top regional and international energy figures from both the public and private sectors to discuss the major issues confronting the industry today. The* OPEC Bulletin's *Scott Laury filed this report.*

Billed as the largest energy event in the Caspian region, the 25th anniversary of the International Caspian Oil and Gas exhibition and conference took place in Baku, Azerbaijan from May 29–June 1, 2018.

The event was kicked off on May 29 with an opening ceremony attended by the President of the Republic of Azerbaijan, Ilham Aliyev, and other high-ranking national and international dignitaries and business leaders.

Opening ceremony

The OPEC Secretary General delivered opening remarks at the ceremony, which was held at the Sangachal terminal on the Caspian Sea to coincide with the opening of stage two of the impressive Shah Deniz project, a multi-billion dollar capital investment in what is poised to be one of the largest gas project developments in the world.

In his remarks, the Secretary General lauded the scope and scale of this massive undertaking and the benefits it is expected bring to Azerbaijan and Europe.

"Shah Deniz is clear evidence of the tremendous ambition, motivation and determination that you and your people have for the country of Azerbaijan," he said. "This second stage, to support the already flourishing first stage of the project, is a huge capital investment and one of the largest gas developments in the world. It will enable more Caspian gas resources to flow along the Southern Gas Corridor, and in turn, increase European energy security. It is an inspiring project; one that the whole country of Azerbaijan should be proud of."

Day one plenary session

On the first day of the conference, the Secretary General delivered remarks to a plenary session in which he was joined by several other prominent speakers, namely Daisaku Hiraki, Parliamentary Vice Minister of Economy, Trade and Industry of Japan and Dr Yury Sentyurin, Secretary General of the Gas Exporting Countries Forum (GECF).

After introductory remarks by Parviz Shahbazov, Minister of Energy of Azerbaijan, and Sir Andrew Wood, Senior Advisor of the ITE Group, the Secretary General delivered a keynote address entitled *'Oil market perspectives beyond the short term.'*

He began by making reference to Azerbaijan's long history as a major player in the oil and gas industry.

A rich history

"Azerbaijan was the location of many 'firsts' in the historic development of this industry," he stated. "Within three decades of the first oil well being drilled in 1846, the world witnessed the building of the first wooden oil derrick in 1871, the first distillery in 1876 and the first oil tanker ship in 1877."

He then traced the evolution of the Azeri industry from then up until its current status as a major player in the global industry.

Parviz Shahbazov (c), Minister of Industry and Energy, Azerbaijan.

"From these simple beginnings, Azerbaijan's industry has continued to flourish and grow, culminating in 1994 with the signing of what we refer to as the 'Contract of the Century' in which Azerbaijan signed an extremely lucrative oil contract with an international consortium. Since then, the Azeri oil industry has experienced steady expansion, and, to this day, investors continue to value the growth potential that this great country can offer through its rich resources in both oil and gas."

The Secretary General also emphasized the important role Azerbaijan has played in the OPEC-non-OPEC 'Declaration of Cooperation' and expressed his gratitude to the solid support of its leaders.

"I was last here in Baku a little more than two months ago and had the great honour of meeting Azerbaijan's President, Ilham Aliyev, along with Parviz Shahbazov, Minister of Industry and Energy of Azerbaijan, and other senior officials," he said. "We had fruitful discussions on Azerbaijan's ongoing cooperation with OPEC as part of the historic OPEC-non-OPEC 'Declaration of Cooperation', and we explored opportunities for enhanced collaboration in the future. We are grateful for your steady support and excellent contributions, and look forward to continuing to work very closely with you as, together, we move forward to enhance this framework of cooperation."

He then took a brief moment to pay tribute to the former Minister of Energy, whose contributions were key to the Declaration's success.

"And lastly, I would like to recognize, with utmost gratitude and respect, the late Natig Aliyev, who, up until his untimely passing last year, was a driving force in the lead-up to the ‘Declaration of Cooperation’. I assure you, he, and the rich legacy he leaves, will be fondly remembered.”

Rescuing the industry

The Secretary General then described how the ‘Declaration of Cooperation’ had saved the oil industry in its time of great need when an oversupplied market drove prices down to all-time lows in 2014.

“The historic ‘Declaration of Cooperation’ — voluntarily entered into by 24 countries and in which Azerbaijan played a leading role — literally rescued the oil industry from its worst downturn and has fundamentally changed the energy landscape,” he explained. “The huge overhang of more than 400 million barrels was removed, and thereby using a five-year average was a useful reference to closely monitor and evaluate the stock levels in a complex global supply and demand equation.”

Delegates attending the 25th International Caspian Oil and Gas exhibition and conference in Baku, Azerbaijan.

The next step, he pointed out, would involve ensuring that this rebalancing process would be sustainable for the long term.

“The next critical phase in the whole process is to sustain these accomplishments of market rebalancing, a gradual recovery in investments and the return of confidence in the industry,” he said. “Going forward, through a broader and institutionalized framework of cooperation based on the Declaration’s core principles of equity, fairness and transparency, we will look into developing metrics and designing mechanisms to help govern against future shocks and extreme volatility in the market.”

Need for long-cycle investments

The Secretary General then moved on to discuss one of the most urgent issues the industry currently faces, which is the dire need to restore long-term investment in the industry after the price crash of 2014.

“So far in 2018, the pace of investment has gradually picked up, yet we are still not seeing enough robust investment in long-cycle projects, which are the baseload of future supply, and the foundation of this industry’s future,” he pointed out.

“In the period to 2040, the required global oil sector investment is estimated at $10.5 trillion to meet future world oil demand that is expected to surpass 111 million barrels/day by 2040. This is a clarion wake-up call that every effort should be made to avoid a potential supply gap that could present a serious challenge to the industry in the medium to long term.”

The solution to this and other industry hurdles lies in the need for further dialogue and cooperation among all industry international stakeholders.

“I am convinced that the only way to meet these current and future challenges is through close cooperation and dialogue with like-minded partners,” he proclaimed. “With the ‘Declaration of Cooperation’, we have initiated a new era in international energy collaboration, the likes of which the world has never seen before. What is required is to build upon this model process. We must institutionalize it and expand it even further for a sustainable market stability beyond the short term.”

The Secretary General concluded his remarks by referring back to Azerbaijan and its rich past as a pioneer in the industry.

“Our collective efforts in last 16 months will go down in the history books of this great industry as the most courageous collective resolve by a broad coalition of OPEC and non-OPEC producers to rise together to address the challenge of restoring much needed market stability on a sustainable basis,” he said. “And there’s no better place to remind ourselves of that than here in Azerbaijan, where it all began almost 150 years ago as the cradle of our industry.”

Mohammad Sanusi Barkindo (c), OPEC Secretary General, joined Ilham Aliyev (l), Azerbaijan's President, and other invited dignitaries and guests at the Sangachal Terminal outside Baku on the Caspian Sea.

Azerbaijan unveils phase two of Shah Deniz project

By Scott Laury

The second phase of the massive Shah Deniz project was officially announced at the opening ceremony of this year's International Caspian Oil and Gas Exhibition and Conference.

The OPEC Secretary General, Mohammad Sanusi Barkindo, joined Azerbaijan's President, Ilham Aliyev, and other invited dignitaries and guests for the special gathering, which took place at the Sangachal Terminal outside Baku on the Caspian Sea.

In his remarks at the ceremony, Barkindo congratulated President Aliyev on this impressive milestone, which is the second stage of one of the largest gas project investments in the world.

"This second stage, to support the already flourishing first stage of the project, is a huge capital investment and one of the largest gas developments in the world," the Secretary General stated. "It will enable more Caspian gas resources to flow along the Southern Gas Corridor, and in turn, increase European energy security."

Southern Gas Corridor

The Southern Gas Corridor (SGC) is comprised of four major projects that have been designed with the goal of increasing European energy security through the delivery of natural gas from countries around the Caspian Sea Basin to markets in Europe. When completed, the SGC will be one of the largest gas development projects in the world.

The SGC's four projects are the Shah Deniz Full-Field Development (Shah Deniz Phase 2-SD2), the South Caucasus Pipeline Expansion (SCPX), the Trans-Anatolian Pipeline (TANAP) and the Trans-Adriatic Pipeline (TAP).

The SGC will involve a wide range of industry stakeholders, including seven governments and 11 companies. The first gas deliveries are expected this year with supplies being piped to Georgia and Turkey. Europe is forecast to receive its first gas supply in 2020. The pipeline system has been designed to handle twice its initial capacity to accommodate for expanded gas supplies in the future.

Funding for the construction of the SGC's four projects is projected to come in at approximately $42 billion. Azerbaijan's share will total approximately $10.5bn. In all these projects, the Azeri national oil company, SOCAR, will be represented by its affiliates.

in the project, of which 85 per cent are from the local workforce.

South Caucasus Pipeline expansion

The expansion of the South Caucasus Pipeline (SCPX) is part of SD2 and involves the laying of roughly 500 km of new pipeline across Azerbaijan and the construction of two new compressor stations in Georgia.

This will result in the tripling of gas volumes

exported through the pipeline to more than 20bn cu m/y.

At the border between Georgia and Turkey, the pipeline will link into other new pipelines, including the TANAP, to transport gas into Turkey and the European Union.

Shah Deniz Stage 2

SD2 is immense in scale and includes the construction of two additional platforms, the drilling of 26 new offshore wells, the laying of 500 kilometres of subsea pipeline and the expansion of the Sangachal Terminal with the installation of new gas and condensate processing facilities.

The project is expected to add an additional 16 billion cubic metres/year of gas production to the approximately 10bm cu m/y produced by Shah Deniz Stage 1.

Gas produced from SD2 will make a 3,500 km journey from the Caspian Sea into Europe.

The international project's shareholders are: BP (28.8 per cent), SOCAR (16.7 per cent), Petronas (15.5 per cent), Lukoil (ten per cent), NIOC (ten per cent) and TPAO (19 per cent).

In Azerbaijan, more than 12,500 people are engaged

Trans-Anatolian Pipeline

The Trans-Anatolian Pipeline (TANAP) will run from the Turkish border with Georgia, beginning in the Turkish village of Türkgözü, then extend through 20 provinces and end at the Greek border in the İpsala district of Edirne.

From this point, connecting pipelines will be able to transport natural gas onward to European nations. Two off-take stations are located within Turkey for national natural gas transmission, one located in Eskişehir and the other in Thrace.

Left: *Ilham Aliyev (l), Azerbaijan's President*

Below: President Aliyev with Mohammad Sanusi Barkindo, OPEC Secretary General, and other guests at the Southern Gas Corridor.

Trans-Adriatic Pipeline

The Trans-Adriatic Pipeline (TAP) starts on the Greece-Turkey border at Kipoi, Evros, where it will be connected with the Trans-Anatolian gas pipeline. It will then cross Greece, Albania and the Adriatic Sea, coming ashore in Italy near San Foca.

The total length of the pipeline will be 878 km, of which 550 km will be in Greece, 215 km in Albania, 8 km in Italy and 105 km offshore.

The initial capacity of the pipeline will be about 10bn cu m/y of natural gas with an option to double the capacity to 20bn cu m/y.

TAP also plans to develop an underground natural gas storage facility in Albania and offer a reverse flow feature of up to 8.5bn cu m, helping to enhance energy security in Southeastern Europe.

Diversifying Europe's gas supply

A number of other new pipeline projects are being planned to connect to TAP that will contribute to expanding the gas transport infrastructure and diversifying gas supply in Europe.

The Ionian Adriatic Pipeline (IAP) will connect to TAP at Fier, Albania, and then pass through Albania, Montenegro, Bosnia and Herzegovina, and end in the city of Split, Croatia, where it will be connected to the existing gas distribution system of the country.

The Interconnector Greece-Bulgaria (IGB) pipeline provides a direct link between the national natural gas systems of Greece and Bulgaria with an entry point near Komotini and an exit point at Stara Zagora.

International cooperation

The SGC is a prime example of the increasing number of international partnerships being witnessed on all fronts as the industries' diverse stakeholders come together to achieve their common goals to the benefit of all involved parties.

The Secretary General touched on this very point in his remarks at the unveiling of the SD2 project.

"It is a testament to great partnerships, with the Shah Deniz project operated by BP, and with partners including many oil and gas companies that are from countries in the landmark 'Declaration of Cooperation' between 24 OPEC and non-OPEC producing nations."

Abdullah Bin Hamad Al Attiyah, (then) Qatar's Minister of Energy and Industry and President of the OPEC Conference, at the 109th Meeting of the OPEC Conference in Vienna, in 2000.

Abdullah Bin Hamad Al Attiyah —

An OPEC and energy industry legend

Qatar has made an invaluable contribution to OPEC since it joined the Organization in 1961. A succession of Qatari Ministers, Governors and notable personalities have enriched the Organization and left their own unique, indelible legacy. Indeed, OPEC was ably represented by a Qatari Secretary General from 1977–78, namely, Ali Mohammed Jaidah. One of the all-time legends of the Qatari and international energy industry is Abdullah Bin Hamad Al Attiyah, who has bestridden the energy landscape like a titan for more than four decades. The OPEC Bulletin *reflects on the career and legacy of this industry icon.*

Charismatic, knowledgeable and jocular — ever ready with his banter and amusing comments — Al Attiyah was the centre of attention wherever he went. Whether he was meeting industry executives, talking with his fellow Heads of Delegation at OPEC Ministerial Conferences, conversing with ever-present members of the media, or thanking a waiter serving him coffee, he left a lasting impression on those he met with his wit, warmth and welcoming demeanour.

However, beneath that affable exterior of warmth and congeniality lies an experienced oil man who not only has put his country's oil and gas operations on the global map, but who also contributed vastly over the years to OPEC's decision-making and policy initiatives.

Al Attiyah's immense lifetime work has involved important roles in a variety of senior leadership positions within the Government of Qatar, OPEC, as well as the broader international

Abdullah Bin Hamad Al Attiyah (c), at the 100th Meeting of the OPEC Conference in Vienna in 1996.

Abdullah Bin Hamad Al Attiyah (l), with Dr Rilwanu Lukman, (then) OPEC Secretary General, at the 108th Meeting of the OPEC Conference in Vienna in 1999.

community. He has confronted a variety of energy-related issues, and addressed a number of humanity's major challenges, including climate change and sustainable development.

In September 1992, Al Attiyah was appointed as Minister of Energy and Industry, a position he held until January 2011. On September 16, 2003, he was appointed Second Deputy Prime Minister and on April 3, 2007, Deputy Prime Minister. On January 18, 2011, he was named head of the Amiri Diwan while remaining in the post of Deputy Prime Minister.

Notably, Al Attiyah was chairman during the 2012 United Nations Climate Change Conference in Doha, which lay the path for future UNFCCC talks. At the 95th Meeting of the OPEC Conference, on November 23, 1993, Al Attiyah was named President of the OPEC Conference. He also was President of the 102nd Conference in 1997, the 108th Conference in 1999 and eight conferences and a consultative meeting in 2003.

Al Attiyah can be extremely proud of his achievements over the years. In Qatar, he has been a driving force behind the country's transformation into one of the world's major energy hubs. At OPEC too, he has played a prominent role in helping the Organization navigate through some turbulent seas. He used his charm and humour to bring people together. And he helped broker solutions where there was discord.

International acclaim

His exceptional contributions have also been noticed on the world stage, where he has received international recognition and acclaim: In 2007, the London-based British Petroleum Intelligence Bulletin chose Al Attiyah as the Man of the Year in the field of development of the hydrocarbon industry. He has also received the Grand Cross in the Order of the Orange Nassau conferred by Her Majesty Queen Beatrix of the Kingdom of the Netherlands in 2011, and the Grand Cordon Order of the Rising Sun was awarded by His Imperial Majesty, Emperor Akihito of Japan in 2008, in recognition of his contribution in promoting bilateral relations between Qatar and Japan.

In 2015, the Abdullah Bin Hamad Al Attiyah International Foundation was created, with the vision of becoming the leading 'think tank' in the field of energy and sustainable development.

It was established as a non-profit organization that seeks to preserve and build upon Al Attiyah's 40 years of service in the energy industry and has succeeded in delivering insights and analysis to decision-makers with critically important information on issues affecting the energy industry and the global economy.

In all of his functions throughout his long career, Al Attiyah has demonstrated remarkable skill, charm, intrepidity, loyalty and decency. At OPEC, he has left an inspirational legacy as a consensus-builder and deal maker. He has also given the OPEC family an example to aspire to in seeking to contribute to building a better world.

Abdullah Bin Hamad Al Attiyah is a unique and inspirational leader and an OPEC legend.

OPEC Secretary General receives Abdullah Bin Hamad Al Attiyah Energy Award for Lifetime Achievement for the Advancement of OPEC

OPEC Secretary General, Mohammad Sanusi Barkindo, was presented with the Abdullah Bin Hamad Al Attiyah Energy Award for Lifetime Achievement for the Advancement of OPEC at a ceremony in Doha, Qatar, on May 7. The Award was given in recognition of the pivotal role the Secretary General has played in the adoption of the 'Declaration of Cooperation', which has had a transformative impact on the global oil industry.

The Abdullah Bin Hamad Al Attiyah International Energy Awards celebrate the legacy of Al Attiyah by recognizing the work of individuals who have, over the course of a professional lifetime, made an indelibly positive contribution to the betterment of the global oil industry. The Awards are homage to Al Attiyah's rich legacy of stewardship and leadership in the advancement of partnership, sustainability, development, transparency, and cooperation in the global energy industry.

Previous recipients

The Awards are now in their seventh year. Previous recipients of the Lifetime Achievement Award for the Advancement of OPEC include Abdalla Salem El-Badri, former OPEC Secretary General; Dr Adnan Shihab-Eldin, Director General of the Kuwait Foundation for the Advancement of Sciences, Advisor to and Member of the Kuwait National Nuclear Energy Committee (KNNEC) and former Acting Secretary General and Director of the Research Department at OPEC; Dr Ramzi Salman, Former Deputy Secretary General of OPEC; Dr Majid Al-Moneef, Advisor to the Royal Court of the Kingdom of Saudi Arabia; and Suleiman Jasir Al-Herbish, Director-General at the OPEC Fund for International Development (OFID).

Barkindo was introduced by Dr Mohammed Bin Saleh Al-Sada, Minister of Energy and Industry, Qatar, who paid tribute to the Secretary General's inspiring leadership, statesmanship and unwavering dedication to furthering the objectives of OPEC. Al-Sada stated: "OPEC is in Mohammad Barkindo's blood. He doesn't just view the Organization merely as an employer or the Secretariat as a building. Rather Barkindo is a true believer in OPEC's and, indeed, the oil industry's capacity to be a force for good in our world; fueling modern civilization and lifting millions out of energy poverty."

Declaration of Cooperation

Al-Sada worked particularly closely with Barkindo during Qatar's Presidency of the OPEC Conference in

Recipients of the Abdullah Bin Hamad Al Attiyah Energy Award 2018 with Dr Ibrahim Ibrahim (front third r), Economic Adviser at Amiri Diwan and Vice-Chairman, The Abdullah Bin Hamad Al-Attiyah International Foundation for Energy & Sustainable Development.

2016, which involved the arduous negotiations that culminated in the historic 'Declaration of Cooperation'.

Barkindo paid tribute to the remarkable legacy of Al Attiyah. "Over the decades I have known His Excellency, my respect and admiration have continuously grown," he said. He described Al Attiyah as "an icon, a living legend, an industry veteran, with sharp wit, a wonderful sense of humor and deep humility."

The Secretary General also thanked the wider OPEC family, saying: "I would like to conclude by thanking all members of the OPEC family who make our Organization such a unique environment in which to work. I have known many of them over the years and am always inspired by their determination to collaborate for the betterment of our industry."

After the ceremony, the Secretary General reflected on the significance of receiving the Award at this time. "I am receiving this prestigious award on behalf of OPEC, which together with our non-OPEC partners has joined hands to assist the oil industry in restoring stability to the markets through the historic 'Declaration of Cooperation', after the longest and most destructive oil cycle in history," he said.

Mohammad Sanusi Barkindo (c), OPEC Secretary General, was presented with the Abdullah Bin Hamad Al Attiyah Energy Award for Lifetime Achievement for the Advancement of OPEC, by Dr Mohammed Bin Saleh Al-Sada (r), Minister of Energy and Industry, Qatar, and Dr Ibrahim Ibrahim (l), Economic Adviser at Amiri Diwan and Vice-Chairman, The Abdullah Bin Hamad Al-Attiyah International Foundation for Energy & Sustainable Development.

OPEC Secretary General speaks at Uzbekistan Oil and Gas exhibition and conference

Mohammad Sanusi Barkindo (panel r), OPEC Secretary General, during his presentation with Yury Sentyurin (second r), GECF Secretary General, and other dignitaries.

OPEC Secretary General, Mohammad Sanusi Barkindo, actively participated at the 22nd Oil and Gas Uzbekistan exhibition and conference, which took place from May 16–18 in Tashkent, Uzbekistan.

The event gathered many high-level regional representatives to discuss oil the country's oil and gas sector. Over 200 companies — of which 80 per cent were foreign — and 23 countries were represented, with 8,443 visitors to the event.

Barkindo delivered a keynote speech, in which he praised the country's oil and gas developments and economic reforms, while pointing out that Uzbekistan was one of the earliest sites of exploration and production, dating back more than 100 years. He said the country is unique in its resources, infrastructure, geography and the international interest it is attracting.

He added the promise and potential of the country's hydrocarbons industry is attracting international attention and interest, and praised Uzbekistan for signing the Declaration of Support, thus declaring solidarity with the 'Declaration of Cooperation' signed by OPEC and non-OPEC participating countries in late 2016 in an effort to balance the ailing oil market.

"… the fact that Uzbekistan has chosen to work collaboratively with other global producers is a sign of true dedication to this process of international dialogue and cooperation," said Barkindo, adding the achievements of cooperation have been significant, helping to bring the oil market back into balance.

"… Uzbekistan's leaders are quite cognizant of the importance of creating an enabling, secure environment for investments. The reform process being undertaken demonstrates their understanding that the industry itself needs investment to take the sector to the next level of development."

He discussed the need for stakeholders to focus on long-cycle investments, which represent the global base load, and investments that are timely, adequate and continuous.

Barkindo emphasized the need to act cooperatively in the future, due to the interrelated nature of the markets and economies today. "Collective problems require collective responses — and this is something that the international community continues to learn."

He stated expanding the global dialogue is also essential to addressing major global challenges such as climate change, the environment, sustainable development and energy poverty.

In a written statement Barkindo said: "With Uzbekistan's liquids supply potential, including condensates from various natural gas fields, there is room for expanding downstream projects as part of the country's broader strategic plans."

He added that Uzbekistan has achieved remarkable progress in the second half of the 20th century through strategic investments in the oil and gas sector, as well as other developments.

The Secretary General said that as a speaker at the event, he has had a chance to meet and interact with a variety of delegates and officials from the country's oil and gas sector. "They have displayed a deep knowledge of the industry but, more importantly, have impressed me with their dynamism and creativity.

"I have no doubt that with such qualities and forward-looking attitude, the people of Uzbekistan will forge a new path forward — one that will not only help it find its deserved place within the framework of sustainable cooperation among producing countries, but also achieve increased economic growth for the country and secure great prosperity for its people."

Local oil industry

The exhibition and conference is a platform to facilitate cooperation and discussion on oil and gas strategies among Uzbekistan government-related ministries and representatives of oil and gas companies. According to the organizers, the event has seen increasing interest over time.

The country wields considerable hydrocarbon resources, with approximately one-third of all the mineral resources in Central Asia. In terms of gas production, it is among the 20 world leaders.

The oil and gas industry has grown from extraction of resources to having a system of complexes for processing raw materials and manufacturing products. A whole range of enterprises have been integrated for the production and sale of goods on both domestic and foreign markets.

Some of the main economic priorities in the country's industry include deep processing of hydrocarbon crudes, production of higher-value-added goods, expansion of export geography and attraction of investment.

The programme for boosting hydrocarbon production in 2017–21 forms the basis of activities within the sphere. The First Deputy Chairman of the Board of Uzbekneftegaz JSC, Ulugbek Sayidov, stated recently that geological exploration is a basic part of amplifying the potential of the oil and gas industry.

Mohammad Sanusi Barkindo (c), OPEC Secretary General; with Ulugbek Sayidov (third r), First Deputy Chairman of the Board of Uzbekneftegaz JSC; with other delegates.

"The concept for the development of the oil and gas industry in Uzbekistan for the period through to 2030 provides for seismic exploration in the vast territories of the nation using cutting-edge methods or prospecting and exploration of oil and gas fields.

"Today, conspicuous efforts are specific results of geological exploration. Two hundred and eleven hydrocarbon deposits have been discovered in five oil and gas regions of Uzbekistan: 108 are of gas and gas condensate, 103 of oil and gas, oil and gas condensate and oil."

Ulugbek Sayidov, First Deputy Chairman of the Board of Uzbekneftegaz JSC; with Mohammad Sanusi Barkindo (panel r), OPEC Secretary General.

TRANSFORMATIONS IN THE ENERGY SECTOR

*On May 25, 2018, OPEC Secretary General, **Mohammad Sanusi Barkindo,** participated in two high-level panel sessions at the 22nd edition of the St Petersburg International Economic Forum (SPIEF). Under the main theme 'Building a trust economy,' this year's edition of the prominent event brought together Russian and international dignitaries along with government officials and some of the world's leading names in business to discuss what role energy will play in a changing global economy. The* OPEC Bulletin's ***Scott Laury** reports.*

Mohammad Sanusi Barkindo (c), OPEC Secretary General, at the opening session of the St Petersburg International Economic Forum.

The OPEC Secretary General, Mohammad Sanusi Barkindo, sat on two high-level panels to discuss the transformations taking place in the energy sector and how these will play out in a constantly changing global economy.

The first session, entitled 'The global economy in an era of change,' was focused on the much anticipated and heavily discussed future energy transition. Themes centred on the prospects for increased efficiencies and the harnessing of technology and innovation to ensure that the oil and gas industry remains competitive in the long-term energy mix. Nobuo Tanaka, Chairman of the Sasakawa Peace Foundation and former Executive Director of the International Energy Agency from 2007 to 2011, moderated the session, which featured a power-packed panel consisting of international oil company chief executives, as well as top leaders from oil and gas service providing firms and regional governors from around Russia.

Igor Sechin, Chief Executive Officer, Chairman of the Management Board and Deputy Chairman of the Board of Directors of Russian oil company Rosneft, opened the session with a keynote address in which he outlined the various challenges facing the industry as it enters this transition to a low-carbon energy era, including the US shale revolution, the rise of alternative energy sources, the push for sustainable development and efforts to mitigate climate change.

After these remarks, Tanaka turned to the panel for their insights on how the industry might navigate the rapidly changing energy landscape in the decades ahead.

The OPEC Secretary General was asked to provide his views on OPEC's role in the years ahead as the industry continues to experience these major shifts.

Barkindo responded that restoring stability to the global oil market was the key factor in helping the industry get back on its feet after the 2014 crisis.

"OPEC remains focused, together with its non-OPEC allies, led by the Russian Federation, under the able leadership of Energy Minister, Alexander Novak, to continue with assisting the market to restore balance," he stated. "And I want to emphasize here, restoring balance on a sustainable basis is the key, after coming out of the most severe oil price cycle that we have known in history."

He went on to explain that the energy transition was indeed an issue and that the industry would need to be nimble in approaching this new and shifting dynamic.

"For all stakeholders in this industry, be they consumers or producers, I think the transition is real, and the need for us to adapt to this transition is crucial," he commented.

He said, in conclusion, the only way to successfully navigate

Attending the 22nd edition of the St Petersburg International Economic Forum (SPIEF) are (l–r): Vladimir Putin, President of The Russian Federation; Emmanuel Macron, President of France; and Shinzō Abe, Prime Minister of Japan.

the complex, interdependent future of the industry was through dialogue and cooperation.

"For us, I think we have reached some understanding with the Russian Federation and other allies in the OPEC-non-OPEC 'Declaration of Cooperation' that we will institutionalize this partnership going forward in order to continue to play a role in insuring that, even if we do not stop this cyclical nature of this industry, at least we will be able to minimize the impact that we have seen in the last two or three years."

Transformations in the energy sector

The second session, entitled 'Transformations in the energy sector' focused on the future role of oil and gas in the context of a growing and dynamic world economy.

The Secretary General was joined by a prominent panel of leading energy figures in government and the private sector, namely Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources of the Kingdom of Saudi Arabia; Alexander Novak, Minister of Energy of the Russian Federation; Ben van Beurden, Chief Executive Officer, Royal Dutch Shell Plc; Robert Dudley, Group Chief Executive, BP; Patrick Pouyanné, Chief Executive Officer, Chairman of the Board, Total; and Daniel Yergin, Vice Chairman, IHS Markit.

The main theme of the panel was how fossil fuels can remain competitive in the future energy mix as the industry encounters a new era in which low-carbon energy options play an increasingly influential role. There were also discussions on the short-term oil market outlook, including supply and demand, the global economy, international dialogue and cooperation, as well as the ongoing implementation of the OPEC-non-OPEC 'Declaration of Cooperation'.

Sustainable stability

The Secretary General stressed the need for sustainable stability in the global oil market for the benefit of all industry stakeholders and discussed what role the 'Declaration of Cooperation' will play going forward. "For us, stability is enshrined in our statute, and we have been faithful following this," he said. "The objective of us [OPEC and non-OPEC producers] coming together in 2016 to enter this partnership under the voluntary supply adjustments was principally aimed at restoring stability to the oil market that had eluded us for quite a while with all the consequences."

He added that good progress had been made in the market rebalancing process, and that to achieve a sustainable stability, all stakeholders would need to do their part, looking beyond the short term to ascertain what's best for the industry's future.

"I would like to underline that we want stability on a sustainable basis. Reducing inventories to their five-year average is just one metric, and it doesn't necessarily mean you have reached the stability that you are yearning for on a sustainable basis," he added. "We are in the process of working with the industry, with all stakeholders, and are reaching out to consumers, because we would like to be the fuel of choice for the foreseeable future. We remain confident that the worst [of this oil price cycle] is over, and we are determined to work closely with the industry to adapt to this new energy transition."

Meeting with Lukoil

The Secretary General and his accompanying delegation also met with the President and CEO of Lukoil, Vagit Alekperov, at the Lukoil stand on the sidelines of the Conference.

Alekperov welcomed the Secretary General and his delegation, and expressed his support for the 'Declaration of Cooperation'.

Discussions were held on current and future oil market developments and the ongoing cooperation of OPEC and non-OPEC producers to help bring lasting stability to the oil market.

The Secretary General thanked the Lukoil President for receiving the OPEC delegation and invited him to take part in the 7th OPEC International Seminar, which is scheduled to take place on June 20–21, 2018, at Vienna's Hofburg palace.

ADNOC announces major downstream plans

In May, the Abu Dhabi National Oil Company (ADNOC) unveiled plans to invest $45 billion alongside partners, over the next five years, to become a leading global downstream player. The OPEC Bulletin *reports on the launch and the plans.*

Dr Sultan Ahmed Al Jaber, UAE Minister of State and ADNOC Group CEO.

The days of national oil companies being content with pumping crude and selling to the oil markets are long gone. Today, they are changing their business models to move further down the value chain of the industry. This was clearly evident as ADNOC unveiled its truly world-scale downstream plans in Abu Dhabi, UAE, in May.

The plans were unveiled at the ADNOC Downstream Investment Forum. The event brought together more than 40 CEOs, including CEOs of oil majors, such as BP, Total and Eni, and 800 senior business leaders from the global oil and gas, energy, petrochemical and finance industries, as well as many other sectors.

Ruwais

At the heart of ADNOC's plans is the Ruwais Industrial Complex, where it aims to build on the existing strengths and competitive advantages of the complex. The company states that the focus is on creating the world's largest and most advanced integrated refining and petrochemicals complex, increasing the range and volume of its high-value downstream products, securing better access to growth markets around the world, and creating a manufacturing ecosystem.

Dr Sultan Ahmed Al Jaber, UAE Minister of State and ADNOC Group CEO, said: "Given the projected increase in demand for

Dr Sultan Ahmed Al Jaber (centre r), UAE Minister of State and ADNOC Group CEO; Suhail Mohamed Al Mazrouei (second l), UAE's Minister of Energy & Industry and President of the OPEC Conference; Dharmendra Pradhan (third l), India's Oil Minister; Patrick Pouyanné (centre l), Chief Executive Officer, Chairman of the Board, Total; and other dignitaries.

petrochemicals and higher-value refined products, we are repositioning ADNOC to become a leading global downstream player. We will invest significantly in Ruwais and open up attractive partnership and co-investment opportunities along our extended value chain to create a powerful new downstream engine and springboard for growth that will benefit our country, our company and our partners.

"Importantly, the expansion plans for Ruwais will also support Abu Dhabi and the UAE's economic development and diversification, create high-skilled jobs and enhance the country's status as a globally attractive destination for energy investments," he added. ADNOC says its new strategy is expected to create more than 15,000 jobs and contribute one per cent to the UAE's GDP growth.

The company says plans are well advanced to expand the complex's refining capacity by more than 65 per cent, or 600,000 barrels/day by 2025, through the addition of a third, new refinery, creating a total capacity of 1.5 million barrels a day. The entire Ruwais complex will also be upgraded to produce greater volumes of higher-value petrochemicals and derivative products. It includes a plan to build one of the world's largest mixed feed crackers, trebling production capacity from 4.5 million tonnes/ year in 2016 to 14.4m t/yr by 2025.

ADNOC says is will also develop a new, large-scale, manufacturing ecosystem in Ruwais through the creation of new petrochemical derivatives and conversion parks, creating a focal point for the global petrochemicals industry.

It believes that the Ruwais Derivatives Park will act as a prime catalyst for the next stage of petrochemical transformation by inviting partners to invest and produce new products and solutions from the growing range of feedstocks that are available in Ruwais. And the new Ruwais Conversion Park will spur new business creation further down the value chain, manufacturing higher-value end products, including packaging materials, coatings, high voltage insulation and automotive composites.

Partnerships

With many of its partners in attendance at the Downstream Investment Forum, the company also underscored the value of long-term partners who bring operational expertise, technology, financial acumen and the ability to develop and open new markets. It said that in return, partners will benefit from the strengths of the Ruwais Industrial Complex, including: competitive feedstock; strong integration; a site operated by a single owner to maximize synergies; an advantaged geographic location well-positioned for east-west trade; and, a highly-developed port and logistics infrastructure.

ADNOC's downstream ambition and plans aligns with its 2030 strategy of a more profitable upstream, more valuable downstream, more sustainable and economic gas supply, and more proactive, adaptive marketing and trading. It notes the importance of enabling it to further stretch the value of every barrel it produces to the benefit of ADNOC, its partners and the UAE.

American oil icon shares his views on shale oil with OPEC

US shale oil icon Mark Papa, a pioneer behind the shale oil revolution in the United States, was back in Vienna for the third year in a row on May 16 to share his views with the OPEC Secretariat on the future movements of shale oil.

Coming to Vienna to discuss shale oil has become a bit of an annual event for the shale oil veteran and expert, jokes Papa, who has visited the headquarters for the third year in a row.

"I think it's been mutually beneficial. It gives a better understanding on both sides of what is going on in the world of US shale oil. I think as you know shale oil has been a disrupter in the global oil supply/demand picture. When shale oil first came on the picture it threw a bunch of supply on the market and caused oil prices to fall precipitously. Now, I think it's become one of the key issues or major factors is to determine what's going to happen to oil prices over the next several years."

He adds a key question is what the response of the US shale producers is going to be to the price of oil rising up to around $70/b, and what effect there will be on shale production growth. This in turn is "probably going to be one of the major determinants that's really going to indicate what's going to be the level of global oil prices."

A very large growth production response for US shale oil will probably depress oil prices, while a tepid response will likely mean that oil prices are going to be stronger for longer, he says.

"The report I gave to the Secretariat today is that most of the agencies that predict these things, such as the International Energy Agency (IEA) and the US Energy Information Administration (EIA) are giving expectations of US shale oil growth that are likely too high. And that we're probably going to see a response that is a more moderate response and that would infer to me that we may see a higher level of oil prices globally than what might otherwise be expected."

Although Papa expects that many other factors will also impact the price of oil, US shale oil is likely to be one of the bigger factors.

"One thing that is for sure in my mind, that shale oil is going to propel the US to likely be the largest oil producer in the world starting in 2019 and probably for the next several years, I would expect that the US is going to pass both Saudi Arabia and Russia as the no 1 oil producer in the world," he states, pointing out how the scenario has changed in the matter of just four or five years. "The growth is going to propel the US into the no 1 oil producing spot in the world likely and keep it there for many years to come."

Peak in mid-2020s

Papa generally agrees with OPEC's prediction that shale oil is probably going to peak in the mid-2020s and then start to fall off. "I find that my assessment is pretty similar to OPECs assessment really. The question will then become is there going to be other places in the world where shale oil begins to be developed."

He believes that for the shorter term — the five year horizon — there is unlikely to be other places in the world outside of North America where shale oil will become a significant factor. Shale oil is being developed right now in Argentina, but on a relatively small scale, he adds, clarifying that he doesn't think it's going to develop into a major factor within the next five years.

"There aren't any other places in the world where I see a significant chance to have large volumes of shale oil come on line within the next five years. After that, it's more problematic; there are other places in the world where there are shale oil deposits. There are some in Russia, there are probably some within some OPEC Countries, and it's just too difficult to forecast what might happen post five years."

Old plays

One of the major factors that is probably going to limit the volumes of shale oil production is that two of the three major shale plays in the US are getting a bit 'long in the tooth', says Papa. Those are the Bakken play in North Dakota and the Eagle Ford play in South Texas.

"They're getting a bit old and tired … The number of good quality geological Tier 1 drilling locations in those two plays is becoming quite limited. So, it's difficult to think of those two plays as really having a lot of growth potential prospectively."

The third major play in North America is in the Permian Basin and that play is a bit younger and still has a lot of growth potential, he states.

Financing shale oil in the US will not be too difficult, particularly if oil is at \$70, he says. He adds future investment in the US does not seem to present a very large problem in the future. "Oil and gas is still a very vibrant industry. It will attract both the capital and ultimately the people to continue to grow."

However, infrastructure issues could present a temporary limitation, particularly in the Permian Basin. "There will be some pipeline issues that will temporarily inhibit some growth potential both in the oil side and also in the gas side. So that may put a damper on the ability to grow over the next year or two.

"Then there's always a manpower issue. We are in a full employment economy in the US right now, and so we may have a situation where adding personnel to staff up will be more difficult than it has been in the past… Just to get well-trained people there."

Interview

IEA head discusses OPEC cooperation, energy markets

Dr Fatih Birol, the Executive Director of the International Energy Agency (IEA), recently visited the OPEC headquarters in Vienna. The relationship between the two organizations has been evolving over time. Dr Birol shared some of his thoughts on this with the OPEC Bulletin.

How important is the cooperation between OPEC and the IEA? How has it changed over the years?

I recently had the opportunity to visit the OPEC headquarters in Vienna to meet my good friend, Mohammad Sanusi Barkindo, Secretary General. I was deeply touched by the warm welcome that my team and I received on this occasion. It is no secret that in the early days the relationship between OPEC and the IEA was less than perfect — however, I can say with certainty that in recent years we have developed a mutual respect and deep understanding of each other's role in this ever-changing energy world.

The IEA has been open about its opinion that despite the emergence of new demand and supply side technologies like electric cars and shale fracking, oil supply from the conventional producers, especially those in the Middle East, remains essential for global markets and supply security. As a result, I regard regular dialogue with OPEC as absolutely key to fulfilling the IEA's mandate. Although our respective institutions may not always have the same views, it is my firm belief that a harmonious relationship between OPEC and the IEA benefits all players in global energy markets.

A number of the IEA's membership are bigger producers, while OPEC's members are seeing an increase in consumption. Do you feel that the lines between OPEC and the IEA have become increasingly blurred?

The underlying missions of both OPEC and the IEA remain distinct and complementary. It is true that some members of the IEA Family are significant producers of oil and/or natural gas (such as Australia, Canada, Mexico, Norway, US and Brazil), while some OPEC Members are becoming important oil consumers. Nevertheless, hydrocarbon wealth plays a considerably more important role in the national economies of OPEC Members.

With (relatively) new leadership at the head of both organisations, what possibilities lie ahead? How can you describe the tone between the two organisations today?

In all honesty, I consider Mohammad Sanusi Barkindo, both a colleague and a good friend and I was honoured that he visited the IEA in September 2016, barely a month after he assumed the role of OPEC Secretary General. We both have a mutual respect for each other and agree that advancing dialogue and cooperation is the way forward.

Continuing in the same vein, I was also pleased to recently welcome Khalid A Al-Falih, Saudi Arabia's Minister of Energy, Industry and Mineral Resources, to the IEA. This was a special moment as it marked the very first visit by a Saudi minister to the IEA. I am now planning to lead an IEA delegation to the Kingdom in the coming months to continue our discussions.

Are there any further areas of cooperation between OPEC and the IEA that you could envisage in the years ahead?

The IEA now has a very close working relationship with OPEC, and together with the International Energy Forum (IEF), coordinate work on oil price formation and market developments, data collection and harmonisation of outlooks. We hold joint conferences on these matters each year in Vienna, Paris and Riyadh.

The three organizations have also worked closely together for years on the Joint Organisations Data Initiative (JODI), which now includes a gas database. We continue to work closely together, through JODI and other platforms, to improve the quality and frequency of data — the building blocks for analysis and modelling. However, there is much more to be done to meet the large-scale shifts taking place in the global energy system.

For example, the 2017 IEA Ministerial adopted an initiative to kick-start carbon capture, utilisation and storage (CCUS) investment, which the IEA regards as essential from a sustainability point of view. Some of the best geological potential and some of the most promising pilot projects are located in OPEC Member States. I believe that sustainable utilisation of hydrocarbons through CCUS technology is an area where we could deepen our collaboration. In November this year, together with the UK government, the IEA will host a major event dedicated to CCUS, which I hope will enjoy high-level participation from OPEC Member States.

What do you think are the biggest challenges and opportunities for the oil industry in the coming years?

The oil industry is still recovering from the unprecedented decline in upstream oil and gas investments in 2015 and 2016. This year, we expect only a modest recovery with most of the increased spending going into short-cycle projects, mostly into US shale. There is an urgent need for substantial investment now to meet future demand growth and compensate for natural declines in production. Oil and gas will continue to make up a substantial share of the energy mix for years to come. The key drivers of oil demand are petrochemicals, trucks, aviation and shipping. That is why I am stressing the need for timely investment.

In the *World Energy Outlook 2017* publication, we assessed the problem of methane leakage which is one of the key sustainability challenges from oil and gas operation. Our conclusion is that more than half of the problem can be addressed in a cost efficient manner with already existing technologies, but governments and companies have to put an appropriate management priority on operational integrity.

There is a lot of talk about the 'energy transition' in the years ahead. What is the IEA's view on the importance of oil and gas in the future energy mix?

Under the central scenario of the *World Energy Outlook 2017*, the world would see energy demand grow by 30 per cent through 2040. That is the equivalent of adding another China and India to today's global demand. We will need all forms of energy to meet this growth, including oil and gas.

However, that is only part of the story. The energy landscape is transforming rapidly as climate change mitigation has moved to the top of the global energy agenda. We, at the IEA, have adapted to these shifts through the modernisation strategy that I have led since 2015.

For instance, we have started doing more work on clean energy, including wind and solar PV — costs of which continue to fall, putting them on track to become the cheapest sources of electricity in many countries — and on energy efficiency. We have also expanded our work on energy technology and are pleased to see that recent progress in this area is promising, even as many technologies still need a strong push to achieve their full potential. And we are also

Dr Fatih Birol (c) and Mohammad Sanusi Barkindo (r), walk through Vienna's first district.

paying more attention to the ongoing electrification of the global energy system, including the electrification of heat and transport, the growth of connected devices, and the digitalisation of modern economies, as these shifts are creating new opportunities but also risks that policymakers need to understand.

How essential do you see the role of technology in promoting clean fossil fuels through programmes such as the IEAGHG?

Improvements in energy technology will definitely be needed to achieve a secure and sustainable energy system, while delivering economic growth and reducing air pollution. This is why the IEA is focusing a lot of our attention in this area.

In this respect, I was very pleased that in 2016 the members of the Clean Energy Ministerial (CEM) reached consensus for the IEA to host the CEM Secretariat. The CEM is a forum of the world's largest and most forward-leaning countries working together to accelerate the global transition to clean energy. I am thrilled that two OPEC Members, Saudi Arabia and the UAE, are members of the CEM.

In addition, the IEA Technology Collaboration Programmes (TCPs) are unique assets of the IEA that underpin our efforts to support innovation for energy security, economic growth and environmental protection. The 38 TCPs operating today involve about 6,000 experts representing 52 countries, of which six are Members of OPEC.

Other emerging technology trends are set to significantly impact the energy sector. For example in 2017, the IEA produced its first report on the impact of digitalisation on the energy sector, highlighting how digitalized energy systems in the future may be able to identify who needs energy and deliver it at the right time, in the right place and at the lowest cost.

What do you recall about your time at OPEC in the 1980s? What has changed since then, both at OPEC and in the oil industry at large?

My visit to the OPEC Secretariat in April 2018 made me feel as if I had returned to my first home. That is where I honed my skills as an energy analyst and modeller and made many lifelong friends. Despite the long hours, I still managed to find time to form a football team, aptly known as the 'OPEC Oilers', wearing blue jerseys. My years at OPEC also prepared me for the move to the IEA, where I continue to enjoy a challenging and fulfilling career, even if today there is not enough time for me to run around the pitch with the IEA football team. While the oil industry has obviously changed dramatically since my early days in Vienna, the lessons I learned there have been so important in terms of me being able to "read the market", so that I can understand and appreciate the drivers and implications of change.

The* Financial Times *chose you as its 'Energy personality of the year'. Were you surprised by this honour and achievement?

This recognition in 2017 by the FT — one of my favourite newspapers — was indeed an honour. I was extremely pleased to be acknowledged for leading the IEA on a path of modernisation, broadening our scope both geographically and across new and emerging issues. Yet this honour not only represents my own work, but also reflects the ambitions of all countries in the IEA family who have supported this modernisation agenda. Together, we are all helping the IEA to evolve into an organisation that adapts to the needs of the future, and that is an achievement that goes well beyond one person.

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Saudi Arabia to establish strategic solar energy project

The Kingdom's investment giant — Public Investment Fund — and Japan's Soft Bank Group have recently held several talks and meetings to discuss the development of Saudi Arabia's solar energy grid, in an effort to reduce the country's dependence on oil and enhance its sustainable energy practices.

In March, an agreement was reached between the fund and the bank to cooperate in the field of renewable energy, following extensive discussions and negotiations. The world's largest solar energy project — New Solar Energy Plan 2030 — was announced at the same time.

During the announcement, Masayoshi Son, Soft Bank's Chief Executive Officer, hailed the size and the capacity of the mega project. He said the project is expected to generate power worth 200 gigawatts by 2030. The total costs are estimated at around $200 billion.

Son added that the project will initially produce 7.2 gigawatt of solar energy. He also expounded on the Kingdom's intention to produce the solar panels locally. He said all components and gears will be manufactured inside Saudi Arabia, and the Kingdom will explore possible avenues to become a key supplier of solar panels to local, as well as international, markets in the future.

According to the state-owned Saudi Press Agency, the project will create around 100,000 employment opportunities and elevate the Kingdom's national gross domestic product (GDP) by $12 billion.

Under the chairmanship of HRH Mohammad bin Salman Al-Saud, the Kingdom's Crown Prince, Deputy Prime Minister and President of the Council of Economic and Development Affairs, the Public Investment Fund (PIF) has recently announced a number of substantial and strategic projects, marking the beginning of a critical socio-economic transformation that will set the Kingdom up to become one of the most developed and prosperous nations for decades to come.

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Iraq partners with oil giants to boost production capacity

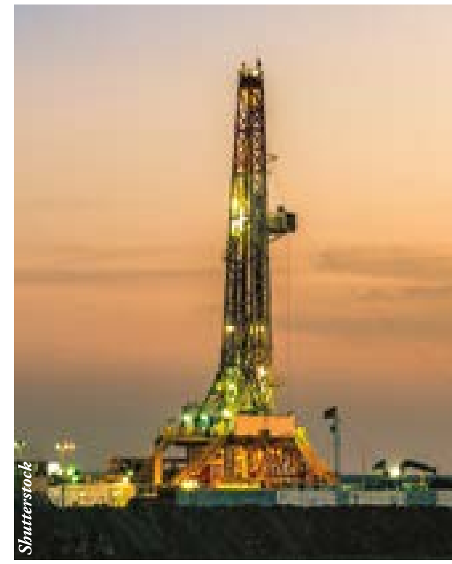
Iraq's Ministry of Oil announced that an agreement has been reached with oil major ExxonMobil and state-owned PetroChina to increase the country's oil production capacity to eight million barrels/day during the next five to seven years.

The Director General of the Ministry's Petroleum Contracts and Licensing Directorate, Abdul Mahdy Al-Ameedi, lauded the agreement and its strategic importance for his country's oil sector. He said, while the project scope and schedule were finalised, further negotiation in regard to fiscal issues is still required.

Al-Ameedi added that the highly-anticipated project is set to elevate Iraq's production capacity from 4.8–8m b/d by 2023. He also said it is important to identify suitable terms for parties involved, for example, the time frames of contracts are being extended to maintain the necessary convenience for interested investors.

According to *Platts*, the South Integrated Project is set to play a strategic role in Iraq's oil sector. The mega project, which attempts to develop two key fields in southern Iraq, is expected to propel the nation's production and export. It is also planned to establish gas plants and a multi-field water injection project, in addition to upgrading pipelines, storage capacity and export infrastructure.

Possessing remarkable hydrocarbon reserves, Iraq has continuously attempted to enhance current fields, while developing new ones. In April, Iraq invited a number of oil and gas companies to submit their bids for the exploration and development of 11 blocks, as part of these efforts.



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ADNOC to operate fuel stations in Saudi Arabia

As part of its ambitious growth strategy, the United Arab Emirates oil giant ADNOC obtained the necessary licence to establish, operate and administrate fuel stations in its neighbouring country and fellow OPEC Member, the Kingdom of Saudi Arabia, marking a new milestone in the firm's history.

Saeed Mubarak Al Rashdi, CEO of ADNOC's Distribution, extended his sincere gratitude to the Kingdom's Ministry of Municipal and Rural Affairs (MOMRA), which awarded the firm with the necessary permits. He added: "Drawing on our 45-year history of success in the UAE, I am confident that we will bring more choice and service to customers in the kingdom while always being mindful of our 100 per cent commitment to safety."

According to *WAM*, UAE's state-owned news agency, the signing ceremony, which took place in the Saudi capital of Riyadh, was attended by Dr Abdul Qader bin Othman Amir, Undersecretary of Saudi Arabia's MOMRA, and Abdulla Al-Mentheri of ADNOC Distribution.

The news agency also reported on ADNOC's intention to enhance its customer experience, as it aims to provide various fuel choices and improve its convenience store network.

Earlier this year, the state-owned company, which specializes in the distribution of petroleum products, as well as national and international marketing, announced its plan to build 13 new stations in Dubai and Saudi Arabia.

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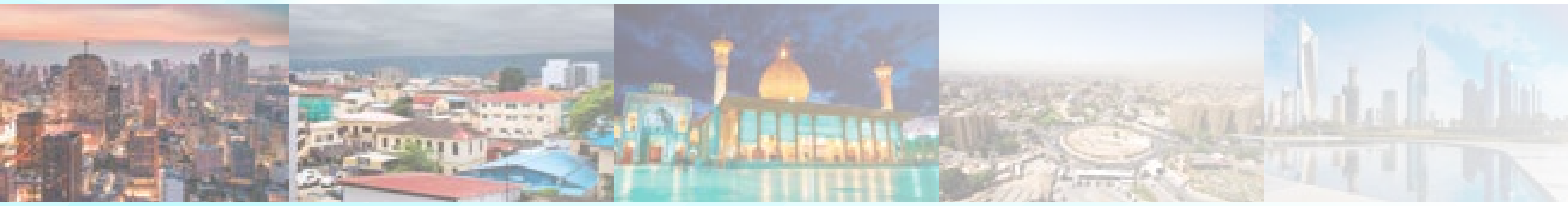
OPEC CITIES IN FOCUS

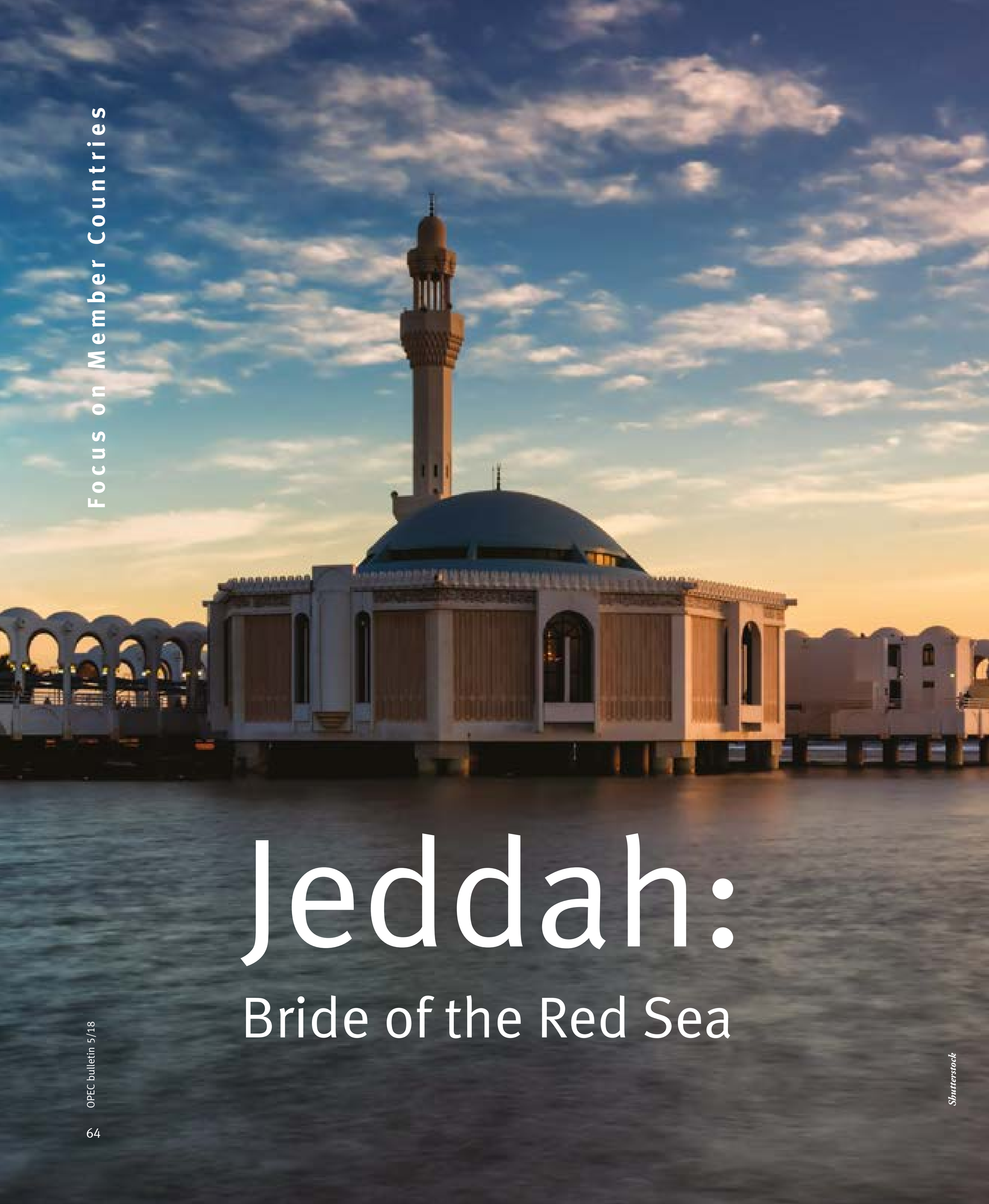
Jeddah cityscape and landmarks.



In the April 2017 edition of the *OPEC Bulletin*, we introduced a new series — **OPEC Cities In Focus** — which would endeavour to provide an overview of the major cities in OPEC's Member Countries and highlight their many attributes.

Though each OPEC Member Country has played a prominent role in the oil and gas sector over the years, and has maintained a steadfast commitment to the Organization's broader objectives in regards to market stability, they all have much more to offer than just energy resources. Through this series, we hope to spotlight the history and development of their principal cities.

Our motivation is to highlight some of the other features of our Member Countries apart from oil and gas. And our desire is to offer readers a window into the rich urban life in our Member Countries and their cultural diversity.



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Jeddah:

Bride of the Red Sea

OPEC CITIES IN FOCUS

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Since its establishment, the Bride of the Red Sea has been riding the train of development at a distinctive pace. Within a short period of time, it became the Kingdom's key commercial centre and one of its valuable jewels.

In the 9th instalment of the 'OPEC Cities in Focus' series, the OPEC Bulletin *explores the beautiful city of Jeddah, the provincial capital of Makkah and the second largest city in Saudi Arabia.*

by Basma Aribi and Ayman Almusallam

Al Rahma Mosque, one of the floating mosques scattered on the shore of the Red Sea.

The floating Sea Mosque in the Corniche area.

While it remains unclear exactly when Jeddah was established, several artefacts that were found in the city indicate that the region was inhabited prior to Islamic times by Thamudians — an ancient civilization that prospered in Hejaz (the historical name of the region).

Some studies also suggest that the tribe of Bani Quda'ah moved from Yemen to Jeddah, seeking shelter and better living conditions, following the destruction of the Ma'rib Dam. However, as it overlooks the Red Sea, some believe that the area was initially founded as a fishing hamlet.

During the Islamic era, Jeddah gained notable momentum as it developed into a strategic port, particularly when it became Hijaz's main city and a gateway for pilgrimages. Jeddah's new and unique position attracted pilgrims and traders from across the globe, leading to a 'golden age' in the thriving and rich region. Jeddah survived several Islamic dynasties, including the Umayyad and Abbasid caliphates, and the Ottoman Empire.

Following the discovery of the Cape of Good Hope in the late 15th century, Portuguese globetrotter Vasco da Gama was able to travel the region and attempted to take control of Jeddah. This prompted the people of Jeddah to construct a stone wall to fortify the city. The wall remains as a testament to this achievement and can still be seen in Jeddah's historic old city.

Centuries later, in 1802, Saudi Arabia gained control of Jeddah for the first time in its history. More than a decade later, Jeddah was taken by Ottoman Egypt and remained under its control for nearly a century. A century later, in the 1920s, the early stirrings of a unified Arab state began in the region. The city of Jeddah became a strategic territory of the third and current state of Saudi Arabia, which was soon referred to as the Kingdom of Hejaz and Sultanate of Nejd. In 1932, the country was renamed the Kingdom of Saudi Arabia.

Ever since, Jeddah has enjoyed firm growth and solid economic development, which has boosted its various sectors. With a population currently estimated at around four million and spread out over a land area of 1,600 square kilometres, the city of Jeddah has become a glowing symbol of the Kingdom's prosperity.

Jeddah: the old city

The old city of Jeddah, known as the Al-Balad district, has been the historical district since the city's establishment. The World Heritage Committee of UNESCO agreed on adopting the area within its eminent World Heritage List, due to its importance for different civilizations across history. Jeddah particularly gained importance when the Caliph Uthman bin Affan declared it the gate to the Holy City — Makkah — in 647 AD.

The city's wall, which was built in the 11th century, defined urban life in Jeddah and supported the development of diverse architectural styles, in particular Islamic architecture. A blend of different Islamic styles, along with evident cultural diversity, created an authentic and unique local style of architecture known as Hejazi.

Al-Balad is divided into four major districts; Harat-Alsham, Harat Al-Yaman, Harat Mazloum, and Harat Al-Bahr. Each maze-like narrow street in Al-Balad narrates a story of its function. Al-Attarin street, which literally means the perfumers' street, is where traditional

Makkah Gate in Jeddah's Old City.

oud and perfumes are sold. It is also believed that Harat Mazloum was named after a man who was executed without proper trial in 1719 AD.

Jeddah's old city has served local, as well as international, tourists as an outdoor museum for many years, offering a fascinating and authentic flair that blends different schools of architecture. The unique mix of architectural styles is apparent in every historical building and structure found in the old city, symbolizing Jeddah's rich history and cultural diversity.

Another magnificent symbol of Jeddah's long-standing history is an ancient mansion referred to as Bayt Nassif. Today, it has become a museum and cultural centre for special exhibits. The 106-room mansion is decked with splendid artwork, as well as Arabic calligraphy. The mansion's facades are decorated with Rawashins and Mushrabiyahs, which are considered some of the most prominent architectural designs in Jeddah.

Why 'Jeddah'?

The etymology of the name Jeddah has two common explanations. The more common one is that the name is derived from the Arabic word for 'grandmother', as it is believed that the tomb of Eve is located in Jeddah. To many, Eve is considered to be the grandmother of humanity.

Situated on the coast of Red Sea, the less common explanation is that Jeddah means 'seashore', due to its location.

Geography and climate

Jeddah is located on the Red Sea coast, offering the city a set of advantages and strategic benefits. Presently, Jeddah serves as the Kingdom's largest seaport, and the world's 37th busiest harbour.

Jeddah is comprised of four distinctive areas; the preserved historical area, the central business zone, the modern area which consists of huge luxurious shopping malls and elegant residential neighbourhoods, and the Corniche area which is artistically decorated with sculptures and artwork by famous artists.

Overlooking the Red Sea, the temperature and humidity are often very high, exceeding 43° C. During the winter season, Jeddah maintains a warm climate in general, with an average temperature of 28° C.

In 1993, Jeddah recorded 9.8° Celsius as its lowest temperature in history.

Economic strength

Jeddah has been one of the region's strategic ports for many centuries, and is also one of Asia's closest harbours to the continent of Africa.

Traditional monument in the Corniche area.

The King Fahad Fountain, the world's largest water fountain, in Jeddah, Saudi Arabia.

The Abdul Raouf Khalif museum and mosque in Jeddah.

Jeddah: the Gate to Makkah

Since the emergence of Islam, the city of Jeddah gained a unique prominence among Muslims, as it became their gateway to Makkah. Muslims who intend to visit Makkah must travel through Jeddah either by air or sea, as they cannot reach their destination directly.

This led to Jeddah's attainment of a unique position in the heart of many Muslims.

Established as a fishing hamlet, the fishing industry still plays a key role in the regional economy of Jeddah. It is also the fourth-largest industrial city in the Kingdom of Saudi Arabia, preceded only by Riyadh, Jubail and Yanbu.

In the big picture, tourism, meetings and conferences, fishery and trade notably contribute to Jeddah's prospering economy.

Key landmarks

To provide the readers with a flavour of Jeddah's unique past and upbeat present, we will delve into some of the city's extraordinary attractions.

King Fahad's Fountain

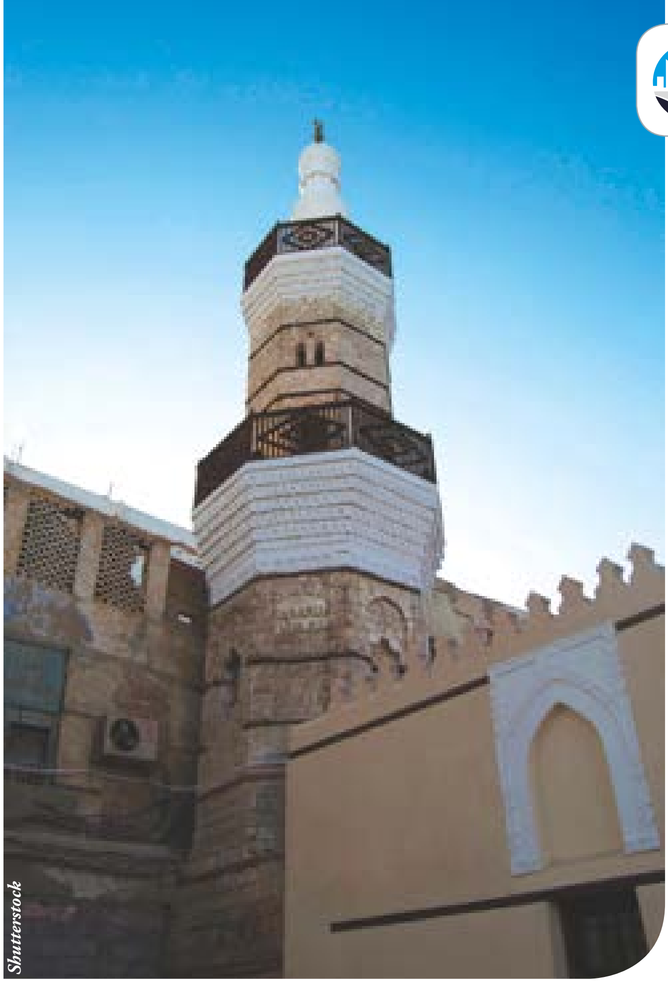
Jeddah is the home to the world's tallest water fountain, which was presented by the late King Fahad bin Abdul Aziz Al Saud. The fountain was later named in the honour of the King as a gesture of gratitude and appreciation.

Inspired by Genevan Jet d'Eau, the fountain was constructed in the 1980's and began operating in 1985. Three powerful pumps deliver water from the Red Sea at a rate of 623 litres/second and a speed of 375 kilometres/hour. The jets reach a height of 312 metres. The fountain is therefore undoubtedly visible from various places inside Jeddah, and for miles around the city.

At night, the fountain is illuminated by around 500 special spotlights, offering a stupendous view. The spectacular beauty of the fountain and its success in pumping salt water at an astounding speed is the result of outstanding and complex engineering.

Abdul Raouf Khalil Museum

Presenting the rich Islamic heritage of the area, Abdul



Al-Shafi mosque, located in the old city of Jeddah.

Raouf Khalil Museum was founded by Sheikh Abdul Raouf Khalil in 1996. The museum provides its guests with an impression of pre-Islamic and Islamic eras, tracing various civilizations that flourished in the region.

The museum is located in Jeddah's downtown district, and displays a notable collection of artefacts, in particular items made during the periods of the Ottomans and the fishermen tribes, who initially inhabited the region.

Al-Shafi Mosque

Another historical landmark is Al-Shafi mosque. Located in the old city of Jeddah, it is considered to be one of the most prominent and ancient mosques in the Kingdom, testifying to the renowned early Islamic era.

According to historians, some parts of the mosque date back to the reign of the second Caliph — Omar Bin Al-Khattab. Al-Shafi mosque is a remarkable example of Fatimid architecture, which draws architectural styles from the east, as well as the west.

The King Abdullah Sport City in Jeddah.

King Abdullah Sport City

King Abdullah Sport City, the second-largest stadium in the Kingdom, is also known as the 'shining jewel' due to its bulbous and golden-coloured exterior architecture. Despite its modernity, the main inspiration of the sport city's architecture is the traditional Hijazi style. This is

The world's tallest flagpole in Jeddah.

evident in the ancient Mushrabiyah patterns that embellish its exterior.

The luxurious sport city, which covers an area of 3 million square metres, was constructed within 14 months. It was built in compliance with FIFA's international standards, making the outstanding stadium an attraction for global events. It consists of a main football stadium, an indoor area which can accommodate around 2,000 people, an outdoor athletic stadium and several indoor training fields.

The aim of this prestigious centre is to motivate the Kingdom's youth to become more engaged in sport, in a solid effort to promote a healthy lifestyle.

Since its launch, the stadium and its high-class facilities have enabled the Kingdom to host a number of major international events, such as the WWE Greatest Royal Rumble, which took place in April of this year.

Jeddah Flagpole

Located in King Abdullah Square, the Kingdom's flag penetrates the beautiful skyline of Jeddah. The pole is located on the intersection of Andalus Road and King Abdullah Road.

In 2014, the municipality of Jeddah hosted a remarkable celebration, which was attended by thousands of locals and foreigners, marking the Kingdom's 84th national day. During the ceremony, the flag was erected for the first time.

The pole, which is 170 metres high, is the world's longest flagpole, succeeding Dushanbe flagpole in Tajikistan.

With endless charm and exquisite beauty, Jeddah has much to offer to locals, as well as international expats and

Heritage buildings in Jeddah's old city, known as 'Historical Jeddah'.

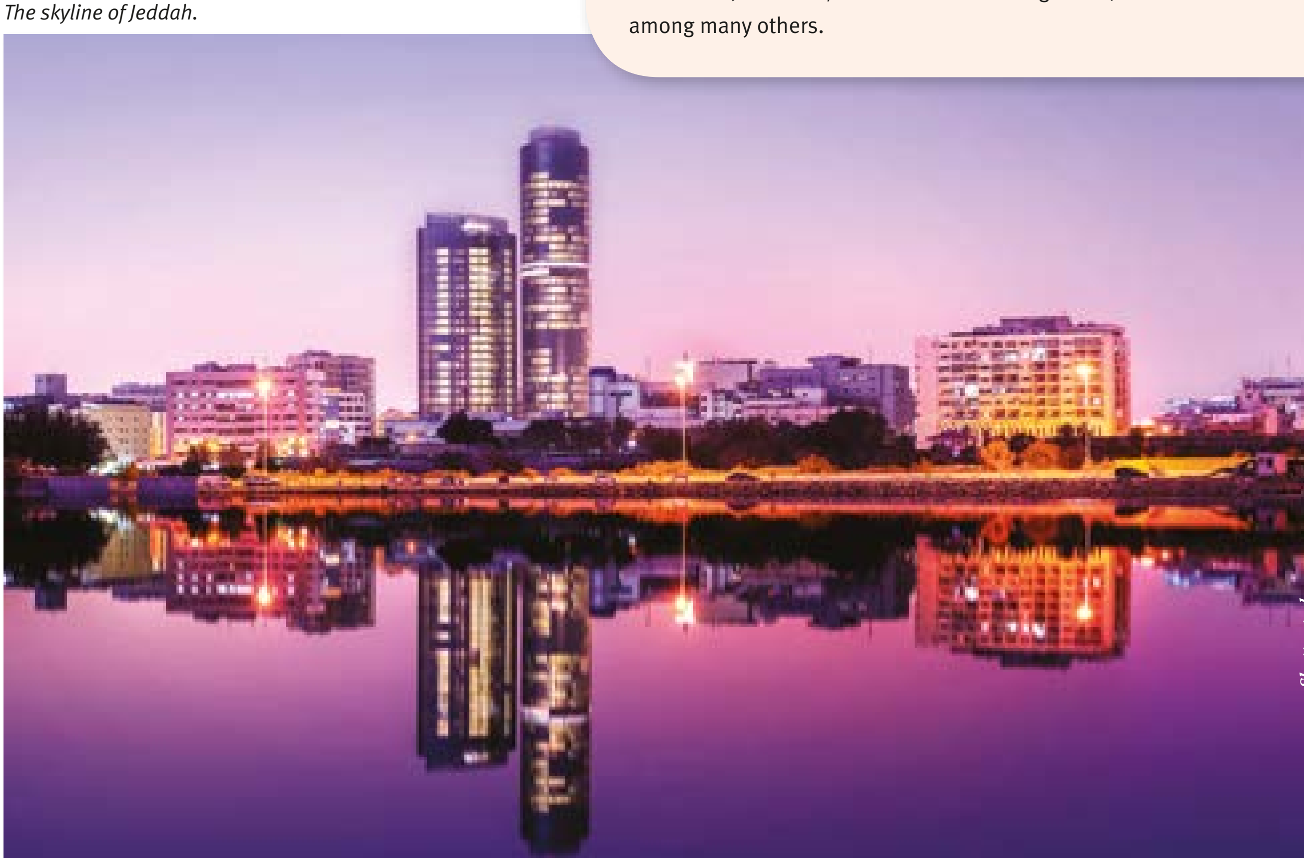
Old buildings in 'Historical Jeddah'.

tourists. The city's robust economy has also significantly contributed to the Kingdom's firm and mounting growth. With a preserved history and optimistic future, Jeddah is set to remain the Kingdom's glowing gemstone in the years to come.

Meetings and conferences

As a testament to its modern facilities, various key meetings and international conferences regularly take place in the city of Jeddah throughout the year. These events include the meetings of the Kingdom's Council of Ministers, the Council of Economic and Development Affairs, the first-ever Future Investment Initiative, the OPEC/non-OPEC 8th meeting of the Joint Ministerial Monitoring Committee, the OPEC/non-OPEC 15th meeting of the Joint Technical Committee, among many others.

The skyline of Jeddah.



Access to energy = powerful women


Rachel Kyte.

Sustainable Energy for All

Rachel Kyte is the CEO and Special Representative of the UN Secretary-General for Sustainable Energy for All — the global platform working for universal access to sustainable energy. Kyte explains to OFID's **Fatma Elzahra Elshhati** how affordable, reliable and sustainable energy is key to empowering women, as well as helping to combat poverty and climate change.

OFID Quarterly: What effect does access to energy have on women across the world?

Rachel Kyte: Over one billion people globally still lack access to electricity, and over three billion lack access to clean cooking fuels. Substantially more than half of these are women; a proportion due in part to systemic social barriers in many countries that restrict women's access to resources, bank accounts and land ownership. Energy access is crucial to allow all women and girls to achieve their full potential. From powering health clinics, supporting new mothers and lighting houses, to illuminating streets to make them safer, providing job opportunities and making it possible to cook cleanly, energy access empowers women. It reduces hours of drudgery (time spent collecting firewood, for example) and instead enables women to put their time to more productive use. To achieve sustainable energy for all, women and the most marginalized must have a voice in the design of energy systems and services.

How can the international community help to empower women, particularly in the developing world?

First, we need to improve the quality of data we use to measure progress toward sustainable energy for all. While we know that around one billion people do not have access to electricity and around three billion do not have access to clean fuels for cooking, it has taken a large collaborative effort to determine the multi-tiered approach necessary. The solutions for those who have no foot on the energy access ladder may be different from those for people who have some access but need super-efficient appliances to meet their needs affordably. Gender disaggregating the data on energy access is a priority. We need to know who these one billion people are and understand their needs. Second, we need women in decision making. We cannot build the energy systems of the future without taking into account the views, patterns of use and needs of half of the population. Furthermore, women make most household purchasing decisions and so for residential energy access, women are key. And as energy companies navigate the energy transition, the risks and opportunities are complex. Building diverse teams that will make better risk management decisions is critical for business success and is another reason to ensure a good representation of women in management and on boards.

Can different sources of energy be more or less gender-friendly than others?

Cooking — an activity dominated by women — is a major cause of childhood respiratory disease and a significant source of indoor air pollution. According to the World Health Organization, it kills 4.3 million people a year globally. Universal access to clean cooking energy is a vital step in improving women and children's health and in slowing rates of deforestation and land degradation. It is at the heart of poverty eradication efforts for some of the poorest and most isolated in society.

If we are truly serious about not leaving poor and isolated women behind, the public and private sectors need to join together with civil society to build big markets for clean fuels and make them available and affordable everywhere, now.

In what ways can we encourage women to participate in achieving the Global Goals, particularly as they relate to energy?

Sustainable Development Goal 7 (SDG 7) calls for universal access to affordable, reliable, sustainable and modern energy by 2030. The energy services of the future will not resemble the energy system of the past, and those who design, deliver and plan them should be as diverse as those who use them. This is why women must be at the table and participating to help create the energy system of the future.

Gender balance in the energy sector is worse than in other parts of the global economy in terms of everything from the participation rates of girls and young women in science, technology and mathematics, to women in the energy sector workforce, all the way up through management and to the boards of energy companies. There's no time like the present for governments, corporations and civil society to walk the talk on their commitment to empowering women and girls.

How is your organization, Sustainable Energy for All, supporting women's empowerment in the energy sector?

At Sustainable Energy for All, we recognized that one of the biggest challenges to achieving SDG 7 was that business-as-usual ideas and approaches did not represent diverse perspectives, nor did they include the voices of women. In response, we developed the People-Centred Accelerator, a voluntary partnership working to advance social inclusion, gender equality and women's empowerment in sustainable energy.

The Accelerator now counts over 40 organizations as partners from across government, civil society, private sector and non-government organizations — all aiming to provide clean energy access to those who will not be reached by *status quo* approaches. The Accelerator is focused on unlocking finance, strengthening collaboration and connections between stakeholders concerned with energy, gender and social justice, and increasing women's participation in sustainable energy solutions.

As more women are connected to modern energy services, entire communities benefit. It is estimated that women reinvest 90 per cent of their income in their families and communities. They are also more likely than men to invest a large proportion of their household income in the education of their children, including girls. Investing in energy access solutions that benefit women is one important way we're making sure that we're moving forward — together — to achieving sustainable energy for all.

"It is estimated that women reinvest 90 per cent of their income in their families and communities."

In the course of his official duties, OPEC Secretary General, Mohammad Sanusi Barkindo, visits, receives and holds talks with numerous dignitaries.

April 6 and June 7

OPEC Secretary General received Russian Ambassador
Mikhail Ulyanov (r), Ambassador, Permanent Representative of The Russian Federation, visited Mohammad Sanusi Barkindo, OPEC Secretary General.

April 25

OPEC Secretary General received OMV's CEO
Dr Ranier Seele (c), Chairman of the Executive Board, and Ms Maria Mittermaier (r), Deputy CEO for International Relations of Austria's national oil company, OMV, visited Mohammad Sanusi Barkindo (l), OPEC Secretary General.

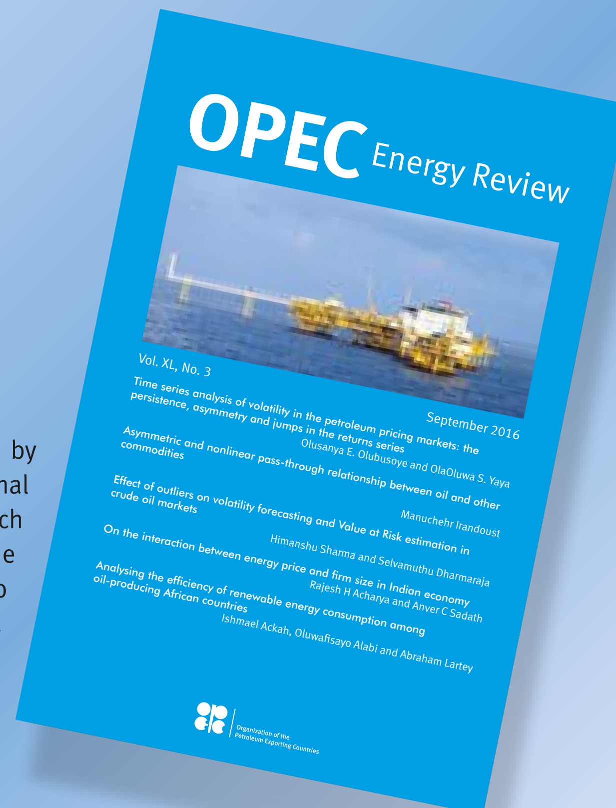
April 30

OPEC Secretary General received Uzbekistan official
Mohammad Sanusi Barkindo, OPEC Secretary General, received Sherzod Asadov (r), Charge d'affaires, Embassy of the Republic of Uzbekistan in Austria.

May 11

European Commissioner Oettinger visits Secretariat
Günther Hermann Oettinger (r), European Commissioner for Budget & Human Resources, visited Mohammad Sanusi Barkindo, OPEC Secretary General, with a high-level delegation of German dignitaries.

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 exchange of ideas. Its scope is international.

The three main objectives of the publication are to:

1. Offer a top-quality platform for publishing original research on 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 that 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 the journal's readership, articles will be considered covering relevant economics, policies and laws, supply and demand, modelling, technology and environmental matters.

The OPEC Energy Review welcomes submissions from academics and other energy experts.
Submissions should be made via Scholar One at: https://mc.manuscriptcentral.com/opec (registration required).
A PDF of "Author Guidelines" may be downloaded at Wiley's OPEC Energy Review page at:
http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1753-0237/homepage/ForAuthors.html

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)*.

Energy Models Analyst

The Energy Studies Department monitors, analyzes and forecasts world energy developments in the medium and long term and reports thereon, in particular providing in-depth studies and reports on energy issues. It monitors developments and undertakes specific studies on energy demand and production-related technology, assessing implications for OPEC. It identifies and follows up key areas of energy-related emerging technologies and research and development (R&D), facilitates and supports planning and implementation of collaborative energy-related R&D programmes of Member Countries, as well as identifies prospects for OPEC participation in major international R&D activities. It carries out studies and reports on developments in the petroleum industry, providing effective tools for carrying out model-based studies of analyses and projections of energy supply/demand and downstream simulation. It elaborates OPEC Long Term Strategy and monitors, analyses and reports on relevant national or regional policies (fiscal, energy, trade and environmental), assessing their impacts on energy markets.

Objective of position:

To ensure adequate development of the modelling capabilities of the Department and to supervise the development and maintenance of medium- to long-term modelling systems; to coordinate and be responsible for running the models; and to coordinate, carry out or contribute to studies based on a modelled approach.

Main responsibilities:

- Ensures and supervises the development of medium- and long-term modelling systems made by the OPEC Secretariat or by outside consultants and to co-ordinate for running the models.
- Ensures the maintenance of proper specifications of the models in use, keeps OPEC Secretariat methodologies continually under review and provides general guidelines for improving methodologies for the models in the Department.
- Conducts or contributes to studies based on a modelled approach.
- Responsible for defining the most reasonable raw input data for and running, modifying and updating the models in the Secretariat; estimating and re-specifying the equations of the models to increase their computational efficiency.
- Studies and keeps abreast of other energy model efforts developed outside so as to keep OPEC methodologies continually under review.
- Contributes to speeches, articles and presentations to internal meetings and international forums.
- Carries out any other tasks assigned by the relevant superiors as pertain to his/her background, qualifications and position.

Required competencies and qualifications:

Education:
University degree in Economics, Statistics or Computational Modelling; advanced degree preferred.

Work experience:
University degree: eight years in the petroleum industry; advanced degree: six years.

Training specializations:
Energy modelling; knowledge of latest developments in exploration/production (upstream), pipeline transportation, refining (downstream) and modelling; broad knowledge of various phases of oil operations and energy related environmental issues an asset.

Competencies:
Communication skills; analytical skills; presentation skills; interpersonal skills; customer service orientation; 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 E reporting to the Head of Energy Studies Department. 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 an application form which can be downloaded from the OPEC website.

In order for applications to be considered, they must reach the OPEC Secretariat through the relevant Governor not later than **June 22, 2018,** quoting the job code: **5.4.01** *(see www.opec.org — Employment)*.

Petroleum Trade & Transport Analyst

Within the Research Division, the Petroleum Studies Department provides pertinent and reliable information and analyses in support of decision-making and policy-making in Member Countries. It carries out research programs and studies on short-term petroleum market developments with the aim of issuing reports on a regular, as well as ad-hoc basis, highlighting important issues for their use and consideration. It conducts regular forecasts, elaborates and analyses oil market scenarios and prepares and publishes reports on these findings. It promotes OPEC's views and technical analysis on short-term oil market developments to the industry at large and the general public via the OPEC Monthly Oil Market Report, as well as other reports, presentations and related pod casts. And it prepares and contributes to reports to be submitted to the Economic Commission Board, the Board of Governors, etc, as well as papers for various OPEC publications.

Objective of position:

To study and analyse pertinent dimensions of international and regional trade in crude oil and oil products and to assess the short term impact of movements of freight rates, as well as to monitor and analyse developments in oil transportation; and to prepare consolidated reports thereon to the Governing Bodies.

Main responsibilities:

- Studies and analyses volumes and structures of international and regional trade flows in crude and products.
- Studies and analyses the impact of movements of freight rates.
- Analyses the spot ship fixtures.
- Follows up the impact of interregional trade movement on freight rate.
- Studies regional crude oil sailing and its impact on freight rates.
- Analyses fleet developments in terms of new deliveries and demolition and fleet age.
- Follows the developments and prospective of pipeline capacities.
- Follows and assesses short-term developments in the international petroleum industry.
- Assesses the impact of emerging policies and regulations for environmental protection in various regions on fleet developments and freight rates.
- Carries out any other tasks assigned by the relevant superiors as pertain to his/her background, qualifications and position.

Required competencies and qualifications:

Education:
University degree in Economics or Energy related fields; advanced degree preferred.

Work experience:
University degree: eight years; advanced degree: six years .

Training specializations:
Energy analysis; oil and product transportation; knowledge of oil market developments.

Competencies:
Communication skills; analytical skills; presentation skills; interpersonal skills; customer service orientation; 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 E reporting to the Head of Petroleum Studies Department. 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 an application form which can be downloaded from the OPEC website.
In order for applications to be considered, they must reach the OPEC Secretariat through the relevant Governor not later than **July 24, 2018,** quoting the job code: **4.4.01** *(see www.opec.org — Employment)*.

Forthcoming events

7th OPEC international seminar, June 20–21, 2018, Vienna, Austria. Details: Eventplan GmbH, Gregor-Mendel-Str. 50, 1190 Vienna, Austria. Tel: +43 1 361 600 0-0; e-mail: office@eventplan.at; website: www.opecseminar.org.

FSRU Asia summit 2018, June 20–21, 2018, Singapore. Details: IQPC Ltd, Anchor House, 15–19 Britten Street, London SW3 3QL, UK. Tel: +44 207 368 9300; fax: +44 207 368 9301; e-mail: enquire@iqpc.co.uk; website: https://fsrusummit.iqpc.sg/?utm_medium=portal&mac=IQPCCORP.

Offshore decommissioning congress, June 25–27, 2018, Rotterdam, The Netherlands. Details: IBC Global Conferences, The Bookings Department, Informa UK Ltd, PO Box 406, West Byfleet KT14 6WL, UK. Tel: +44 207 017 55 18; fax: +44 207 017 47 15; e-mail: energycustserv@informa.com; website: https://energy.knect365.com/offshore-decommissioning-congress.

27th World gas conference, June 25–29, 2018, Washington DC, USA. 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: https://wgc2018.com.

The Cuba energy, oil and gas, June 27–29, 2018, Havana, Cuba. 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: http://cuba-energy.com.

8th Russia and CIS oil and gas executive summit, June 28–29, 2018, Sochi, Russia. Details: Euro Petroleum Consultants Ltd, 44 Oxford Drive, Bermondsey Street, London SE1 2FB, UK. Tel: +44 207 357 8394; fax: +44 207 357 8395; e-mail: enquiries@europetro.com; website: https://europetro.com/event/74/0.

Nigeria oil and gas conference and exhibition, July 2–5, 2018, Abuja, Nigeria. 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.cwcnog.com.

5th oil spill India conference, July 5–6, 2018, New Delhi, India. Details: iTEN Media Pvt Ltd, 4th Floor, Janki House, Plot N 33, Sector-12A, Dwarka, New Delhi 110075, India. Tel: +91 11 43 01 34 74; fax: +91 11 42 17 14 83; website: www.oilspillindia.org.

Energy policy debate 2018: the clean growth strategy, July 11, 2018, London, UK. Details: Energy Institute, 61 New Cavendish Street, London W1G 7AR, UK. Tel: +44 207 467 7116; fax: +44 207 580 2230; e-mail: jwarner@energyinst.org.uk; website: www.energyinst.org/events/view/5113.

2nd Permian basin frac design and new completions technologies, July 19–20, 2018, Houston, TX, US. Details: American Business Conferences, City Centre One, 800 Town & Country Blvd, Suite 300, Houston, Texas 77024, USA. Tel: +1 800 721 3915; fax: +1 800 714 1359; e-mail: info@american-business-conferences.com; website: www.permian-completions-frac-design-congress.com.

3rd World congress on petroleum engineering and natural gas recovery, July 20–21, 2018, Sydney, Australia. Details: Conference Series llc Ltd, 47 Churchfield Road, London, W3 6AY, UK. Tel: +44 08 00 01 48 923; website: www.conferenceseries.com.

Unconventional resources technology conference, July 23–25, 2018, Houston, TX, US. Details: Society of Petroleum Engineers, 10777 Westheimer, Suite #335, Houston, TX 77042, US. Tel: +1 713 779 9595; fax: +1 713 779 4216; e-mail: spehou@spe.org; website: http://urtec.org/2018.

Gas Indonesia summit and exhibition, August 1–3, 2018, Jakarta, Indonesia. 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.gasindosummit.com.

US base oils and lubricants summit, August 22–23, 2018, Des Moines, IA, US. Details: Active Communications International, 5–13 Great Suffolk Street, 4th Floor, London SE1 0NS, UK. Tel: +44 207 981 98 00; fax: +44 207 593 00 71; e-mail: claire@acieu.net; website: www.wplgroup.com/aci/event/us-base-oils-lubricants-summit.

IADC/SPE Asia Pacific drilling technology conference and exhibition, August 27–29, 2018, Bangkok, Thailand. Details: Society of Petroleum Engineers, Suite B-11-11, Level 11, Block B, Plaza Mont'Kiara, Jalan Bukit Kiara, Mont'Kiara, 50480 Kuala Lumpur, Malaysia. Tel: +60 36201 2330; fax: +60 36201 3220; e-mail: spekl@spe.org; website: www.spe.org/events/en/2018/conference/18apdt/homepage.html.

World heavy oil congress, September 3–5, 2018, Muscat, Oman. 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.worldheavyoilcongress.com.

FPSO world conference, September 4–5, 2018, Singapore. Details: IQPC Ltd, Anchor House, 15–19 Britten Street, London SW3 3QL, UK. Tel: +44 207 368 9300; fax: +44 207 368 9301; e-mail: enquire@iqpc.co.uk; website: www.fpsoworldcongress.com.

SPE liquids-rich basins conference — North America, September 5–6, 2018, Midland, TX, US. Details: Society of Petroleum Engineers, 10777 Westheimer, Suite #335, Houston, TX 77042, US. Tel: +1 713 779 9595; fax: +1 713 779 4216; e-mail: spehou@spe.org; website: www.spe.org/events/en/2018/conference/18lrbc/liquids-rich-basins-conference.

Oil and gas Thailand 2018, September 6–8, 2018, Bangkok, Thailand. Details: Fireworks Media (Thailand) Co, Ltd, Promphan 2 Office and Residence, 8th Floor (Office Zone, Room 807) 1 Soi Lat Phrao 3, Lat Phrao Road, Jompol, Chatuchak, Bangkok 10900, Thailand. Tel: +66 25 13 14 18; fax: +66 25 13 14 19; e-mail: thai@asiafireworks.com; http://oilgasthai.com.

Oil sands trade show and conference, September 11–12, 2018, Fort McMurray, AB, Canada. 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: https://oilsandstradeshow.com.

Non-OPEC oil supply development

May 2018

Non-OPEC oil supply has seen a recovery in 2017 and 2018, following a contraction in 2016. This has been on the back of improving oil market conditions and rising oil prices, but it is evident that uncertainties remain as to the forecast pace of growth of non-OPEC supply for the remainder of the year.

Non-OPEC oil supply grew by 870,000 barrels/day in 2017, given higher crude oil prices, with the NYMEX WTI rising by $7.38, or 17 per cent, y-o-y, to average $50.85/b. However, it is important to note that non-OPEC capital expenditure (CAPEX), including exploration, increased by only two per cent y-o-y. Moreover, it has seen a decline of around 42 per cent compared with the 2014 level.

The outlier in this investment story is the US tight oil industry, which saw investment rise by more than 42 per cent y-o-y in 2017, at about $138 billion, with 2H17 seeing greater expansion as crude oil prices continued to gain. Easy access to capital, cheap money and production hedging contributed to this trend. This helped US crude oil production surpass ten million b/d in November 2017. In addition, US tight oil supply has benefitted from lower unit prices and more efficient operations. The estimated ultimate recovery rose on average by 20 per cent for key tight oil plays from 3Q16 to 3Q17 and the average well cost per lateral length fell by a substantial 35 per cent between 2014 and 2017. This has contributed to a drop in the average WTI breakeven price for US tight oil by as much as 40 per cent.

On a country-specific basis, 86 per cent of total non-OPEC supply growth in 2017 came from the US, followed by Canada, Kazakhstan and Brazil, while declines were seen in Mexico, China and the North Sea.

Non-OPEC supply in 2018 is forecast to grow by 1.7m b/d y-o-y, of which 89 per cent is expected in the US, while Canada, Brazil, the UK and Kazakhstan are also anticipated to grow. US liquids production is estimated to increase by 1.5m b/d, of which 94 per cent is attributed to tight crude and unconventional NGLs due to increased investment and upgraded completion metrics. This compares with a share of 90 per cent in 2017. According to preliminary supply data for 1Q18, the combined liquids supply in the US and Canada increased by 1.8m b/d y-o-y. Over the same time frame, oil supply increased in Africa, Latin America, OECD Asia Pacific and the former Soviet Union (FSU), while production in OECD Europe, Other Asia and the Middle East declined. Globally, a total of 269 projects are anticipated to be approved in 2018, with 30 projects currently in Final Investment Decision (FID) — outside of tight oil — of which 54 per cent will be onshore and 46 per cent offshore, with Brazil showing the largest growth potential from new field start-ups. Increased tight oil production and a boost in output from Canada and Brazil is expected to further support non-OPEC supply towards the end of this year.

The performance of non-OPEC supply in 2018 will depend on many factors. The continued strong development of the world economy could lead to rising inflation, and, along with potential trade restrictions, would impact oil production costs. In addition, fast-growing US tight oil production is increasingly faced with costly logistical constraints in terms of outtake capacity from landlocked production sites. These producers are also being pressured by shareholders demanding capital discipline and a return on their investments, which could come at the expense of increased disposable CAPEX.

Timely spending on project implementation is a key concern. Total non-OPEC spending in 2018 is forecast to increase by 3.5 per cent y-o-y, and then increase by 8.1 per cent y-o-y in 2019. Global investment in shale — mostly in the US — is projected to increase by 20 per cent y-o-y in 2018 and then moderate to 16 per cent in 2019. It should also be noted that geopolitical developments will also continue to impact global oil supply developments in the months ahead.

Despite the large uncertainties prevailing in key market fundamentals, OPEC, as always, stands ready to support oil market stability, together with non-OPEC oil producing nations participating in the 'Declaration of Cooperation'.

MOMR ... oil market highlights

May 2018

Crude oil price movements — In April, the OPEC Reference Basket (ORB) rose by $4.67, or 7.3 per cent, month-on-month (m-o-m), to average $68.43/barrel, with Dated Brent and Dubai rising by nearly nine per cent each, while spot WTI increased by six per cent. Year-todate (y-t-d), the ORB value was $13.85, or 26.7 per cent, higher at $65.67/b, compared with the same period a year earlier. Geopolitical concerns, tightening product inventories and robust demand provided support for prices.

With regard to crude oil futures, in April, ICE Brent was up $5.04, or 7.6 per cent, at $71.76/b, while NYMEX WTI gained $3.55, or 5.7 per cent, to stand at $66.33/b. Y-t-d, ICE Brent is $13.96, or 25.7 per cent, higher at $68.36/b, while NYMEX WTI has risen by $12.15, or 23.5 per cent, to $63.77/b, compared with the same period a year earlier. The ICE Brent/NYMEX WTI spread widened significantly to $5.44/b in April — the widest this year — on bearish US fundamentals. Despite the surge in crude oil futures prices, speculative net long positions ended lower, however, long-to-short ratios in ICE Brent increased further to record highs. Both Brent and Dubai market structures moved deeper into backwardation on strong prompt month prices and healthy physical crude markets, while NYMEX WTI remained at the same level, in backwardation. The sweet/sour differentials widened further in Europe and Asia, while on the US Gulf Coast (USGC), the spread narrowed more.

World economy — The global GDP growth forecast remains at 3.8 per cent for 2018, following growth of 3.8 per cent in 2017. Expected US growth in 2018 is unchanged from the previous month at 2.7 per cent, after growth of 2.3 per cent in 2017. Growth in the Euro-zone was revised down to 2.2 per cent in 2018, following growth of 2.5 per cent in 2017. Japan's 2018 growth forecast remains at 1.5 per cent, after growth of 1.7 per cent in 2017. For 2018, Developing Countries' GPD growth is seen unchanged at 4.4 per cent, following growth of 4.0 per cent a year earlier, while India's 2018 forecast was revised up slightly to 7.3 per cent, following 2017 GDP growth of 6.3 per cent, China's 2018 GDP growth forecast remains unchanged at 6.5 per cent, after 2017 growth of 6.9 per cent. Brazil and Russia also saw an unchanged GDP growth forecast at 2.1 per cent and 1.8 per cent in 2018, respectively, following growth of 1 per cent and 1.5 per cent in 2017.

World oil demand growth for 2017 was kept unchanged from last month's assessment, despite some adjustments to both OECD and non-OECD regions, which offset each other. World oil demand is estimated to have grown by 1.65 million barrels/day in 2017 to average 97.20m b/d. For 2018, oil demand growth is forecast to increase by around 1.65m b/d to average 98.85m b/d. Growth was revised higher by 25 tb/d compared with last month's assessment. This is mainly to account for firm OECD data in 1Q18. Oil demand growth in the non-OECD region was also revised upward, primarily on the back of better-than-expected data from Other Asia, including India, and Latin America. China is anticipated to lead oil demand growth in 2018, followed by Other Asia and OECD Americas.

World oil supply — Non-OPEC supply for 2017 was revised down slightly by 10,000 b/d to now show growth of 870,000 b/d y-o-y and average 57.89m b/d. The revision came on the back of a review of historical non-conventional production data leading to downward adjustments, mostly for Brazil, as well as upward revisions, notably for OECD Europe. Furthermore, in 2018, upward revisions in 1Q18 to the forecasts of the US, Argentina, Colombia and China were partially offset by downward adjustments to Canada, Mexico, Norway, the UK, and Brazil. This has led to an upward revision to 2018 non-OPEC supply of 10,000 b/d. It is now estimated to grow by 1.72m b/d y-o-y to average 59.62m b/d, compared with last month's assessment. Following a downward revision in 2017, OPEC NGLs and non-conventional liquids production in 2018 are forecast to grow by 180,000 b/d y-o-y, to average 6.49m b/d. OPEC crude oil production in April 2018 increased by 12,000 b/d, to average 31.93m b/d, according to secondary sources.

Product markets and refining operations — Product markets in the Atlantic Basin saw strong gains in April. In the US, refining margins strengthened across the top and middle of the barrel. Reduced refinery product output caused by planned and unplanned refinery outages, along with record-breaking gasoline export levels and strong diesel inventory drawdowns, drove US margins to a record three-year high in April. In Europe, product markets saw a recovery, supported by the gasoline and diesel complexes, despite losses in all other products. Meanwhile, product markets in Asia weakened due to pressure seen at the top of the barrel, attributed to high supply in the regional gasoline market. Higher Oman crude prices in April, despite the onset of spring refinery maintenance season, further exacerbated the downturn seen in the Asian market.

Tanker market — Dirty tanker spot freight rates mostly declined in April or remained at previously low levels. VLCC average spot freight rates stayed almost flat compared with the previous month, while Suezmax and Aframax rates dropped by six per cent and three per cent m-o-m, respectively. The decline in rates was attributed to limited inquiries, continuing tonnage oversupply, as well as reduced port and transit delays. Similarly, the clean tanker market saw lower monthly freight rates on most reported routes due to the same circumstances.

Stock movements — Preliminary data for March 2018 shows that total OECD commercial oil stocks fell by 12.7m b to stand at 2,829m b, which is 9m b above the latest five-year average. However, this current level of OECD stocks still remains 258m b above January 2014. Within the components, crude stocks in March 2018 indicated a surplus of 12m b, while product stocks witnessed a deficit of 3m b against the latest five-year average. In terms of days of forward cover, OECD commercial stocks fell in March to stand at 59.9 days, which is 1.6 days lower than the latest five-year average.

Balance of supply and demand — In 2017, demand for OPEC crude is estimated to stand at 33.0m b/d, 600,000 b/d higher than a year earlier. In 2018, demand for OPEC crude is forecast at 32.7m b/d, 300,000 b/d lower than the 2017 level.

The feature article and oil market highlights are taken from OPEC's Monthly Oil Market Report (MOMR) for May 2018. 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 spot crude prices $/b

	2017									2018				Weeks 13–17/2018 (week ending)				
Crude/Member Country	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Mar 30	Apr 6	Apr 13	Apr 20	Apr 27
Arab Light – Saudi Arabia	51.64	49.30	45.21	47.12	49.63	53.29	55.73	61.08	62.50	67.42	64.03	64.40	68.91	67.18	65.90	68.15	69.91	71.23
Basrah Light – Iraq	50.75	48.56	44.55	46.43	49.26	53.03	55.02	60.21	61.44	66.11	62.31	62.27	67.06	64.84	63.63	66.33	68.19	69.56
Bonny Light – Nigeria	53.02	50.77	46.92	48.66	51.69	56.55	57.97	63.29	64.64	69.92	66.02	67.05	72.75	69.29	67.89	72.22	74.32	75.82
Es Sider – Libya	51.04	48.90	44.87	46.96	50.31	55.07	56.48	61.58	63.09	68.23	64.36	64.89	70.43	67.13	65.57	69.90	72.00	73.50
Girassol – Angola	52.68	50.36	46.46	48.75	52.31	56.83	57.88	62.97	64.97	69.77	66.09	66.89	71.80	68.85	67.36	71.51	73.19	74.45
Iran Heavy – IR Iran	51.12	49.00	44.62	46.01	48.70	52.27	54.29	59.27	60.87	65.85	62.27	62.15	66.56	65.00	63.52	65.67	67.56	69.05
Kuwait Export – Kuwait	50.81	48.65	44.37	46.19	48.70	52.23	54.50	59.58	60.94	65.74	62.14	62.23	66.99	64.98	64.04	66.18	67.98	69.34
Marine – Qatar	52.39	50.24	46.26	47.45	49.71	52.91	55.14	60.47	61.54	66.36	63.14	63.39	67.63	66.12	64.87	66.56	68.58	70.12
Merey – Venezuela	46.15	45.16	42.49	43.41	45.38	49.13	50.70	55.86	56.04	59.14	57.68	56.92	60.24	58.71	58.00	59.00	60.40	62.69
Murban – UAE	54.32	51.96	47.86	49.02	51.51	54.94	57.39	62.76	63.84	68.81	65.88	66.31	70.97	69.37	68.11	69.98	71.96	73.42
Oriente – Ecuador	48.70	46.91	43.11	45.21	47.45	51.30	53.77	59.23	59.66	63.53	60.28	61.16	65.37	64.00	62.15	65.33	66.45	67.03
Rabi Light – Gabon*	51.71	49.48	45.45	47.54	50.69	55.10	56.31	61.66	63.17	68.16	64.19	64.92	70.61	67.16	65.75	70.08	72.18	73.68
Saharan Blend – Algeria	51.84	49.80	46.07	47.96	51.31	56.32	57.88	63.23	64.74	69.93	66.01	66.69	72.13	68.93	67.27	71.60	73.70	75.20
Zafiro – Equatorial Guinea*	51.98	49.96	45.92	48.19	51.67	56.57	57.73	62.75	64.34	69.23	65.19	65.91	71.43	68.13	66.72	70.97	72.93	74.35
OPEC Reference Basket	**51.37**	**49.20**	**45.21**	**46.93**	**49.60**	**53.44**	**55.50**	**60.74**	**62.06**	**66.85**	**63.48**	**63.76**	**68.43**	**66.39**	**65.10**	**67.67**	**69.50**	**70.92**

Table 2: Selected spot crude prices $/b

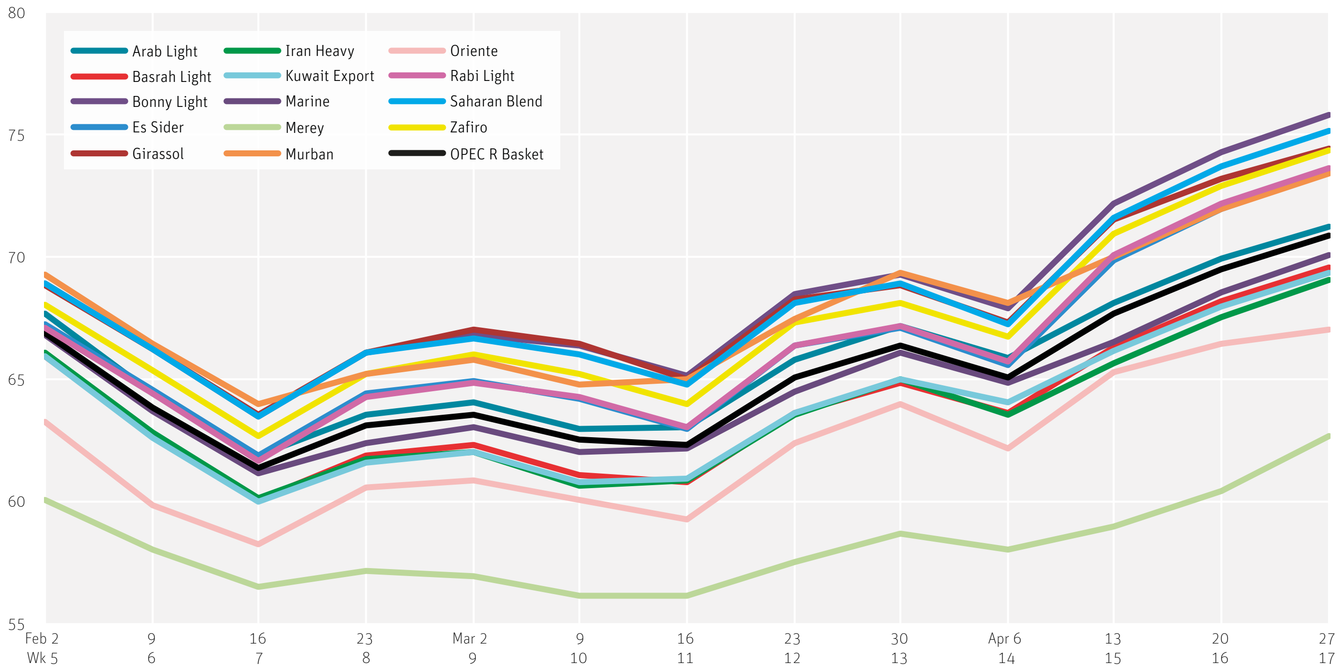
	2017									2018				Weeks 13–17/2018 (week ending)				
Crude/country	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Mar 30	Apr 6	Apr 13	Apr 20	Apr 27
Arab Heavy – Saudi Arabia	49.97	47.92	43.64	45.76	48.55	51.78	53.99	59.03	60.47	65.24	61.60	61.49	66.47	64.16	63.63	65.53	67.43	68.89
Brega – Libya	52.19	49.85	45.77	47.61	50.76	55.34	56.78	61.99	63.54	68.68	64.96	65.64	71.33	67.88	66.47	70.80	72.90	74.40
Brent Dtd – North Sea	52.59	50.45	46.42	48.51	51.66	56.07	57.28	62.63	64.14	69.13	65.16	65.89	71.58	68.13	66.72	71.05	73.15	74.65
Dubai – UAE	52.31	50.47	46.38	47.59	50.24	53.51	55.63	60.81	61.61	66.15	62.69	62.76	68.29	65.56	65.44	67.38	69.26	70.68
Ekofisk – North Sea	52.57	50.43	46.40	48.63	52.30	57.15	57.85	63.28	64.98	69.99	65.81	66.63	72.61	68.63	66.84	71.39	74.29	75.94
Iran Light – IR Iran	50.04	47.34	43.85	47.03	50.85	54.45	56.25	62.12	63.37	68.32	62.64	63.44	68.76	66.65	64.34	68.11	69.79	71.28
Isthmus – Mexico	53.81	51.85	48.21	50.75	52.92	55.20	56.08	61.35	62.57	67.57	64.83	65.40	68.10	67.29	64.48	67.76	69.87	69.75
Oman – Oman	52.82	50.57	46.50	47.63	50.37	53.95	55.63	60.84	61.63	66.42	63.00	63.31	68.34	65.85	65.51	67.37	69.30	70.79
Suez Mix – Egypt	49.71	47.31	43.82	46.12	49.59	53.19	55.11	60.83	62.04	66.99	61.31	61.93	67.62	65.08	62.77	67.01	68.80	70.29
Minas – Indonesia*	47.95	45.96	42.65	43.96	45.91	49.20	50.55	55.50	56.95	60.91	58.15	58.90	63.53	62.44	60.69	62.32	64.49	66.22
Urals – Russia	51.55	49.04	45.52	47.82	51.30	54.89	56.81	62.53	63.75	68.69	63.01	63.63	69.16	66.78	64.76	68.71	70.50	71.99
WTI – North America	51.06	48.56	45.17	46.67	48.03	49.71	51.57	56.67	57.94	63.70	62.15	62.76	66.32	65.03	63.10	66.04	67.58	68.12

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. From January 2009–December 2015, the ORB excludes Minas (Indonesia). As of July 2016, the ORB includes Rabi Light (Gabon).

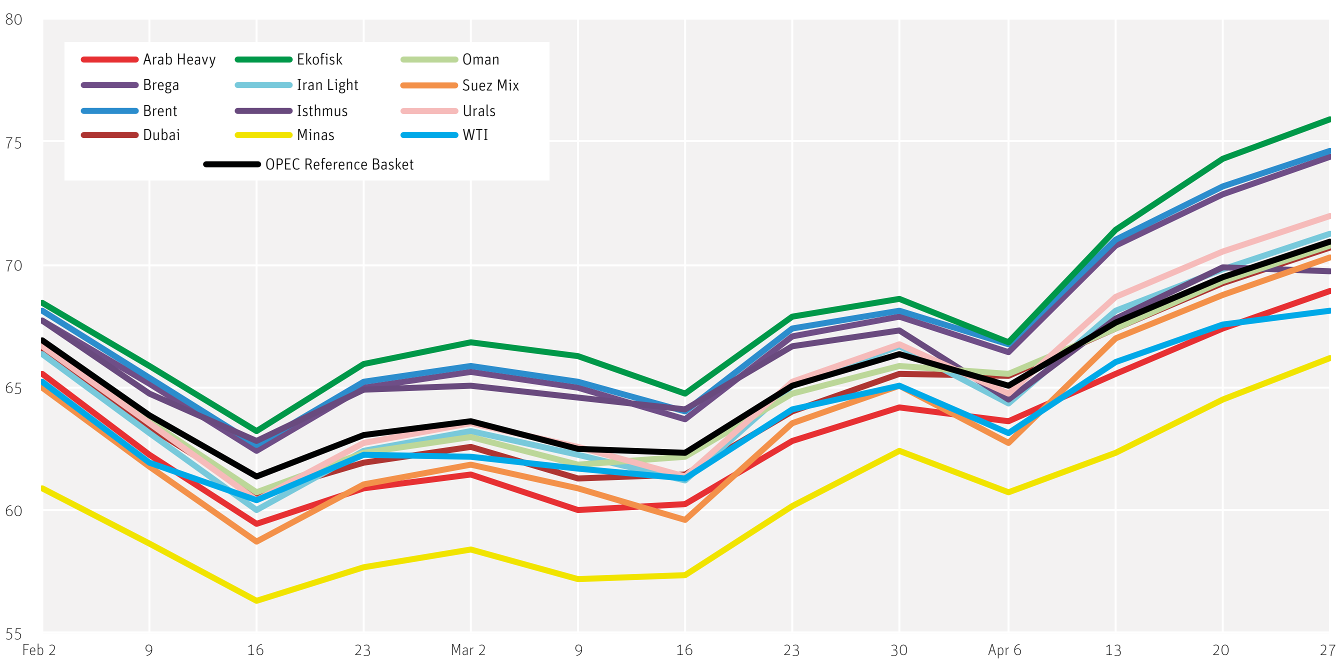
* *Indonesia joined in 1962, suspended its Membership on December 31, 2008, reactivated it again on January 1, 2016, but suspended its Membership again on December 31, 2016. Gabon joined in 1975 and left in 1995; it reactivated its Membership on July 1, 2016. Equatorial Guinea joined on May 25, 2017.*

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; as of January 1, 2016, Argus; Secretariat's assessments.

Graph 1: Evolution of the OPEC Reference Basket spot crude prices, 2018 $/b



Graph 2: Evolution of selected spot crude prices, 2018 $/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).
Indonesia suspended its OPEC Membership on December 31, 2008, this was reactivated from January 1, 2016, but suspended again on December 31, 2016.

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
2017	April	51.54	75.36	64.11	64.21	46.95	41.71
	May	48.43	72.61	61.11	61.13	46.26	40.64
	June	44.69	69.62	57.06	57.81	43.95	39.68
	July	47.29	70.31	60.90	61.17	45.03	42.23
	August	51.00	75.17	64.70	65.71	46.64	44.06
	September	55.76	79.57	71.33	70.72	49.82	47.00
	October	57.45	76.10	71.69	71.36	50.61	47.35
	November	63.44	82.88	75.35	78.12	55.64	51.68
	December	63.79	80.40	76.56	77.64	54.46	51.21
2018	January	65.48	85.60	82.15	83.10	57.65	54.41
	February	61.52	82.80	77.45	81.65	55.15	52.04
	March	63.29	79.34	78.64	82.03	55.15	52.00
	April	67.11	90.68	85.49	87.45	58.66	55.61

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

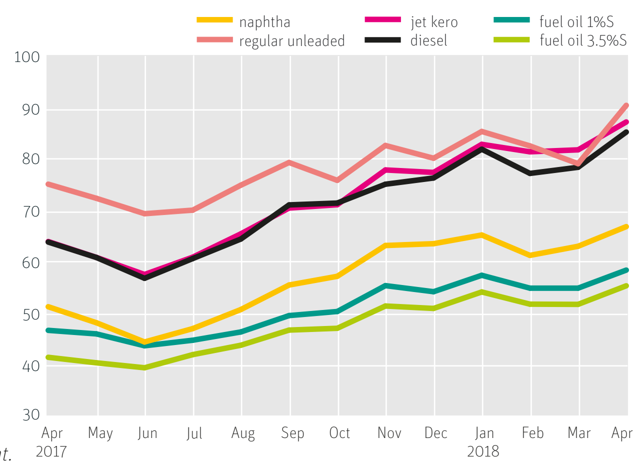


Table and Graph 4: South European market — spot cargoes, fob Italy $/b

		naphtha	premium gasoline 50ppm	diesel ultra light	fuel oil 1 per cent S	fuel oil 3.5 per cent S
2017	April	50.67	67.89	65.24	48.03	43.95
	May	47.31	63.74	62.28	47.10	42.85
	June	43.57	59.92	58.01	45.56	42.13
	July	46.31	61.17	62.06	45.35	43.60
	August	50.46	66.85	65.54	46.70	44.94
	September	54.97	71.24	71.77	49.97	48.10
	October	56.67	68.30	72.03	51.51	48.88
	November	62.85	72.97	76.17	56.06	53.14
	December	62.72	72.85	77.24	55.51	52.65
2018	January	64.29	78.36	82.91	59.24	55.94
	February	60.54	74.32	78.73	56.29	53.44
	March	62.41	74.83	79.81	56.38	53.47
	April	66.59	83.43	86.62	59.63	56.90

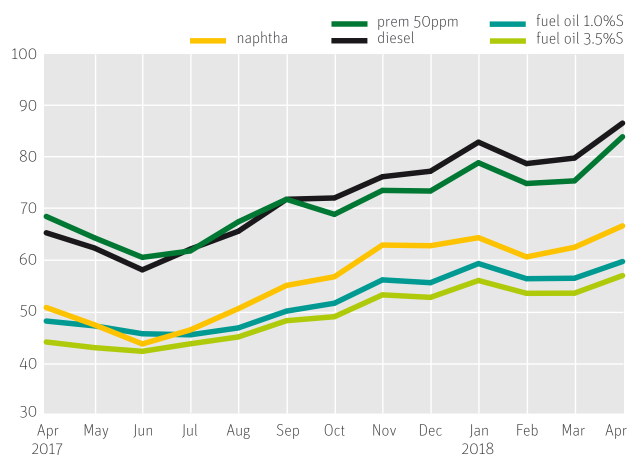
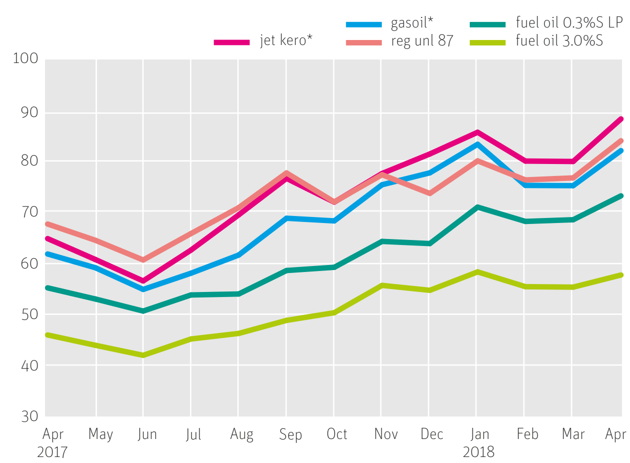


Table and Graph 5: US East Coast market — spot cargoes, New York $/b, duties and fees included

		regular gasoline unleaded 87	gasoil*	jet kero*	fuel oil 0.3 per cent S	fuel oil 3.0 per cent S
2017	April	67.65	61.79	64.80	55.17	45.96
	May	64.47	59.10	60.71	52.99	43.94
	June	60.62	54.86	56.52	50.63	41.98
	July	65.78	58.03	62.55	53.78	45.17
	August	70.86	61.59	69.45	53.97	46.26
	September	77.64	68.78	76.57	58.56	48.81
	October	71.96	68.26	71.93	59.19	50.31
	November	77.29	75.33	77.53	64.25	55.65
	December	73.63	77.66	81.35	63.83	54.69
2018	January	80.00	83.24	85.59	70.96	58.29
	February	76.27	75.20	79.96	68.16	55.40
	March	76.67	75.15	79.88	68.49	55.31
	April	83.93	82.00	88.20	73.16	57.68



* *FOB barge spot prices.*

Source: Platts. As of January 1, 2016, Argus. Prices are average of available days.

Table and Graph 6: 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
2017	April	52.31	67.66	64.81	64.68	63.88	52.47	47.34
	May	48.71	64.40	61.68	61.19	60.82	51.58	46.01
	June	44.94	59.78	57.41	57.54	57.03	50.17	44.60
	July	45.92	61.76	59.02	61.05	59.77	50.45	45.58
	August	50.58	67.51	64.70	63.51	63.11	51.91	47.08
	September	55.20	70.43	67.55	68.49	68.08	55.73	50.55
	October	57.79	70.04	67.37	68.61	68.36	57.07	51.72
	November	64.67	75.59	73.07	73.14	74.02	62.02	56.67
	December	65.21	75.32	73.26	75.27	75.45	62.10	56.20
2018	January	66.26	78.61	76.65	80.78	81.00	64.40	58.85
	February	61.41	77.02	74.15	77.46	80.01	62.58	56.56
	March	63.08	77.12	74.25	77.75	79.00	61.74	56.05
	April	67.14	81.50	78.45	83.72	85.16	64.41	59.63

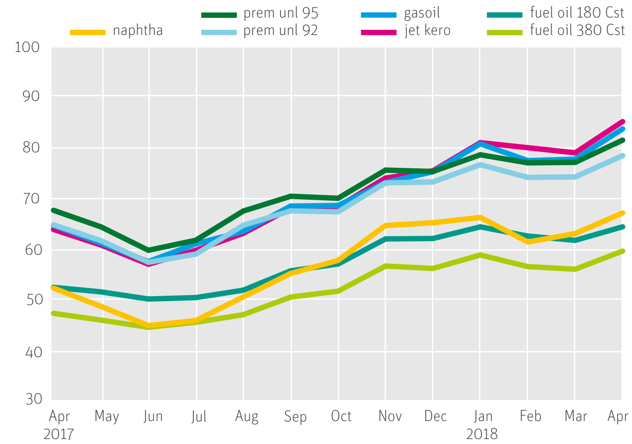
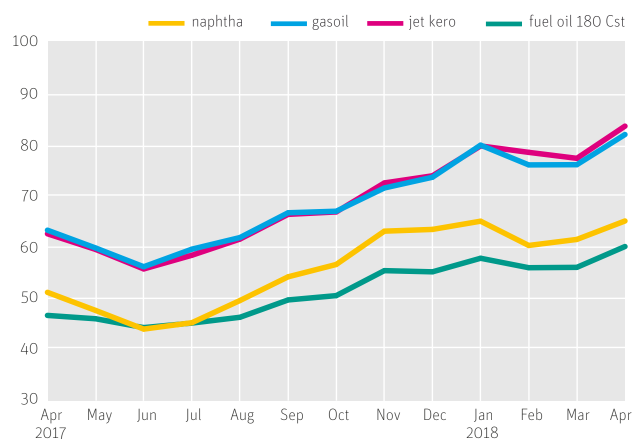


Table and Graph 7: Middle East Gulf market — spot cargoes, fob $/b

		naphtha	gasoil	jet kero	fuel oil 180 Cst
2017	April	51.07	63.16	62.46	46.58
	May	47.55	59.70	59.42	45.93
	June	43.92	56.05	55.62	44.21
	July	45.16	59.47	58.28	45.09
	August	49.48	61.73	61.43	46.22
	September	54.09	66.55	66.24	49.59
	October	56.49	66.85	66.71	50.43
	November	62.97	71.37	72.35	55.29
	December	63.31	73.46	73.74	55.06
2018	January	64.91	79.71	79.55	57.70
	February	60.19	75.86	78.30	55.86
	March	61.36	75.90	77.14	55.93
	April	64.95	81.77	83.40	59.98



Source: Platts. As of January 1, 2016, Argus. Prices are average of available days.

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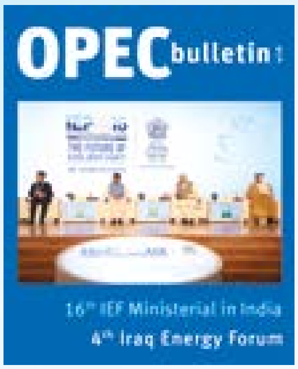

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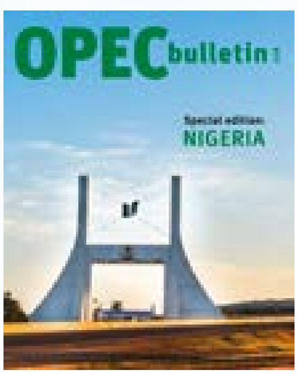

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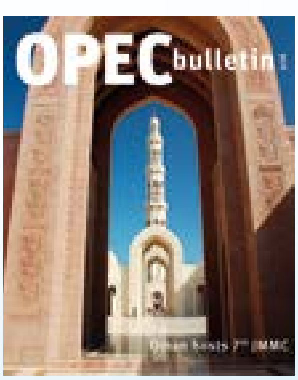

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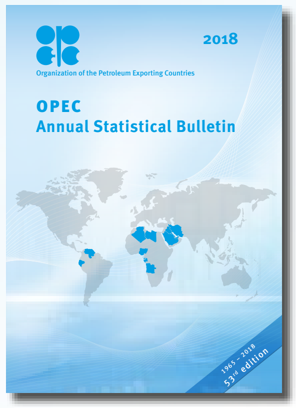

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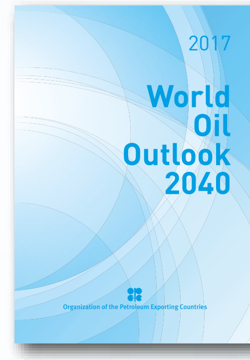

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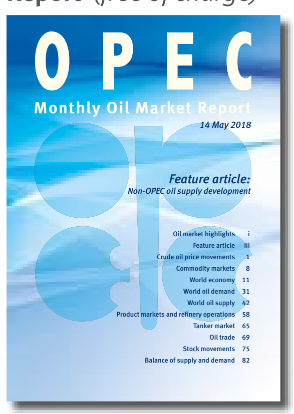

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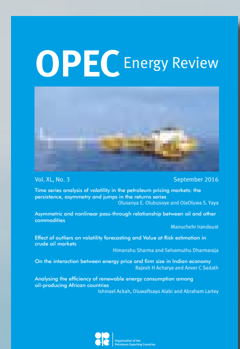

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