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## Petroleum – cooperation for a sustainable future

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# On the right track

After several months of historical decisions and unwavering dedication by OPEC Ministers and their non-OPEC counterparts to the 'Declaration of Cooperation', participants once again showed the world their mettle at their recent ministerial meetings in Vienna, continuing to lead global efforts to stabilize the world's oil market.

The main outcome of the 172nd Meeting of the Conference and the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting, which took place at the OPEC headquarters on May 25, 2017, was an extension of production adjustments for a further period of nine months, with effect from July 1, 2017. The decision once again underscored OPEC's importance as a positive force in the market, alongside participating non-OPEC countries, to the benefit of all producers, consumers, the industry and the global economy.

The conclusion was reached after considering various internal reports, as well as the recommendations made by the Joint Ministerial Monitoring Committee (JMMC), supported by the Joint Technical Committee (JTC).

These two bodies had been set up last year to monitor conformity to the original production adjustments made by 13 OPEC and 11 non-OPEC producing nations, which resulted from the 171st OPEC Ministerial Conference on November 30, 2016, and the unprecedented OPEC and non-OPEC 'Declaration of Cooperation' on December 10, 2016.

The very high level of commitment on behalf of OPEC Members and participating non-OPEC nations has been reflected in the unprecedented conformity levels to last year's adjustment decision, which has increased month-on-month during 2017. In May 2017, the combined conformity level reached 106 per cent, an increase of four percentage points over the previous month.

What could be a clearer demonstration of the power and efficacy of dialogue and cooperation?

There have evidently been many sceptics throughout this process of consultations and negotiations, many from observers who did not believe that OPEC Members could find unity among themselves. There were also many who were doubtful that any kind of unanimity could be found with non-OPEC producers. And there were also many who believed that the 'Declaration of Cooperation' would not be fulfilled. The developments of the past six months have surely proven them wrong.

In fact, the actions of the Organization and its Member Countries constitute what could be called 'vintage OPEC'. They have shown the courage, diligence and spirit of compromise that have always been hallmarks of the Organization — and the world today continues to look to OPEC to carry on with its good work.

It is worth underscoring the fact that the 'Declaration of Cooperation' is unparalleled in the history of the oil industry. However, given the nature and severity of the downturn of the last several years, such a concerted, collective effort was required. No one could have acted alone — and the continuation of such a broad commitment has been necessary to ensure that the desired objectives are kept in focus and finally reached.

Although the rebalancing of the market has taken longer than originally envisaged at the end of 2016, the expectations are that we are well on our way to a return to more desirable market conditions. Still, all participating countries must ensure that they continue to carry on as they have been and maintain their commitments and conformity to the adjustments.

It has been evident that the slower than expected rebalancing process in the first half of this year has been due to the regular early year seasonal changes that can soften the market, as well as to a sudden pick-up in US tight oil production. But despite this and other sources of uncertainty in recent months, we believe the groundwork has been laid for stronger stabilization and a more consolidated recovery during the second half of the year.

In short, we are still in the midst of a broad rebalancing process and, consequently, there are still important issues which need to be addressed. We are not entirely out of the woods, and the market environment remains a challenging one for producers and investors.

In addition, the discussions and consultations undertaken over the past year have opened up an exciting new chapter in our Organization's interactions and relations with other market stakeholders — non-OPEC nations, shale oil producers, financial actors, consumers and the broader international community.

Such a spirit of dialogue among energy stakeholders may have important, long-lasting reverberations. It may even serve to help protect the market from severe price cycles in the future.

Another outcome of this entire process has been an upsurge in optimism among oil majors and national oil companies, despite the lingering short-term market challenges. This has been demonstrated by an increase in recent E&P agreements and deals and a rise in investments following two years of decline. Ingenuity, innovation and investments are vital to the long-term future of this vital global industry.

All things said, we believe we remain on the right path. The enthusiasm and commitment shown by OPEC and participating non-OPEC oil producing countries in the rebalancing process is a good omen for the future of the market and global economic stability.




# Contents



OPEC bulletin


**Cover**

*This month's cover reflects the 172nd Meeting of the OPEC Conference, and the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting which was held at the OPEC Secretariat in Vienna, Austria, on May 25 (see feature starting 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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# The 172nd Meeting of the OPEC Conference


*Khalid A Al-Falih (c), Conference President and Minister of Energy, Industry and Mineral Resources, Saudi Arabia; Estévão Pedro (l), Governor for OPEC, Chairman of the Board of Governors; and Mohammad Sanusi Barkindo (r), OPEC Secretary General.*

*The 172nd Meeting of the OPEC Conference was held in Vienna on Thursday, May 25, 2017. Attended by delegations from all 13 of the Organization's Member Countries, the meeting was held under the Chairmanship of Conference President,* ***Khalid A Al-Falih****, Minister of Energy, Industry and Mineral Resources of Saudi Arabia, who also served as Head of the country's Delegation. The* OPEC Bulletin *provides the following overview of the meeting.*

*Noureddine Boutarfa, Minister of Energy, Algeria.*

*Eng José Maria Botelho de Vasconcelos, Minister of Petroleum, Angola.*

*Eng Carlos E Pérez, Minister of Hydrocarbons, Ecuador.*

*Gabriel Mbaga Obiang Lima, Minister of Industry, Mines and Energy, Equatorial Guinea.*

At a time of continuing challenges for the world's oil producers, the OPEC Conference held its 172nd Meeting at the OPEC Secretariat in Vienna. With more than 100 participants representing each of the Organization's 13 Member Countries, the semi-annual gathering was an occasion for the Conference to consider oil market developments since it last met at the end of November.

In an opening address, the President of the OPEC Conference, Khalid A Al-Falih, Saudi Arabia's Minister of Energy, Industry and Mineral Resources, stated that "the main focus for today remains on consolidating, strengthening and accelerating the process of rebalancing, alongside the important task of drawing down global oil inventories." His comments underscored the importance for open discussions on the ongoing challenges facing the oil market.

Delegates to the Conference then reviewed the oil market outlook for the remainder of 2017 and considered various reports, including those from both the Secretary General, as well as the Organization's Economic Commission Board. Overall, the oil market situation showed marked improvement since the 171st Meeting of the Conference held on November 30, 2016.

The Conference President noted: "We started with a bearish sentiment, but the market is now well on its way toward rebalancing. We have more work to do in lowering inventories toward the last five-year average, but we are on the right track."

In the meantime, the Conference President said he expected global conditions to continue improving — "assisted by a more robust global economy and higher GDP growth in 2017, as well as fairly healthy oil demand growth this year, particularly in Asia."

He also reminded delegates of the main task before them, emphasizing that "nurturing a constructive and stable market environment is our highest priority." Ensuring a sustainable future for oil supply and demand — and

*Pascal Houangni Ambouroue, Minister of Petroleum and Hydrocarbons, Gabon.*

*Eng Bijan Namdar Zanganeh, Minister of Petroleum, IR Iran.*

in order to avoid price spikes and other risks to global energy security — is critical.

The other key objectives for the OPEC Conference "include strengthening cooperation between OPEC and non-OPEC producers, and fostering excellent relations with international energy institutions to promote greater understanding of vital issues."

## An extension of the decision

In line with the decision taken at the 171st Meeting of the OPEC Conference, as well as with the 'Declaration of Cooperation' between OPEC and non-OPEC producers on December 10, 2016, and based on analytical reports presented by the OPEC Secretariat, OPEC delegates from all 13 Member Countries decided to extend the original production adjustment of 1.2m b/d for a further period of nine months. This was to take effect on July 1, 2017.

Through this decision, Member Countries not only displayed unity once again, but also confirmed their commitment to strive for a stable and balanced oil market. The objective of achieving price levels that are suitable for both producers and consumers, and for the sake of the industry and the global economy, continues to be the overarching goal of OPEC Member Countries.

At various times during the meeting, OPEC delegates expressed thanks to other Member Countries for their shared commitment and cooperative spirit, particularly as it was reflected in the most recent conformity levels to the decision taken at the 171st OPEC Ministerial Conference. These conformity levels, which approached 100 per cent, were seen as unprecedented and were interpreted as robust, thus providing encouragement to continue efforts.

Delegates also acknowledged the crucial role played by participating non-OPEC producers through the 'Declaration of Cooperation'. They welcomed the

*Jabbar Ali Hussein Al-Luiebi, Minister of Oil, Iraq.*

*Issam A. Almarzooq, Minister of Oil, Minister of Electricity and Water, Kuwait.*

constructive and positive dialogue that had emerged, and praised the technical interactions that have evolved among experts from all participating countries. In fact, at the conclusion of the 172nd Conference, the request of one formerly non-OPEC producing country to join the Organization was formally accepted, with immediate effect — thus making Equatorial Guinea OPEC's 14th Member Country.

The Conference President also praised OPEC's "firm and unwavering resolve", along with that of participating non-OPEC producing countries, extolling the virtues of "the extensive process of consultations and discussions involving all … OPEC Member Countries and the participating non-OPEC producing countries."

## The work of the JMMC

Attendees at the OPEC Conference also considered a report and numerous recommendations made by the Joint Ministerial Monitoring Committee (JMMC), which was set up last year to monitor conformity to the voluntary production adjustments decided upon by OPEC and participating non-OPEC oil producers at the meeting on December 10. The work of the JMMC, which is supported by a Joint Technical Committee (JTC), remains ongoing, and will be particularly important to the work of the Organization — and other non-OPEC producers — especially in the coming months.

Given the need to continue studying market conditions and the evolution of supply and demand factors worldwide, delegates to the Conference asked the JMMC — and more specifically, the JTC — to continue its important work during the period of the nine-month extension. During their first period of the production adjustment, the JMMC and JTC had made valuable contributions which had provided the technical input and the transparency needed to implement the adjustment decisions in a timely manner.

*Dr Ibrahm Albesbas, Libya's Ambassador to Austria and Permanent Representative to the International Organizations in Vienna.*

*Dr Emmanuel Ibe Kachikwu, Minister of State for Petroleum Resources, Nigeria.*

The mandate of the JMMC was also a subject of some discussion, with OPEC delegates expressing a desire to see it extended. This would be necessary in order to continue to monitor conformity with the voluntary production adjustments, as well as to engage in ongoing evaluation of market developments and to follow through with any necessary recommendations. With the support and input of the OPEC Secretariat, the JTC will continue to provide monthly technical input to the JMMC throughout the agreed-upon extension period.

The Conference also gave special attention to improving the 'environmental footprint' of oil, and it would, according to the President, engage in an appropriate manner with the United Nations Framework Convention on Climate Change.

## Ministerial acknowledgments

As usual, the delegates of the OPEC Conference recognized the achievements and previous contributions of outgoing officials. Minister José Icaza Romero, from Ecuador, Minister Etienne Dieudonné Ngoubou, from Gabon, Acting Minister Anas Khaled Al-Saleh, from Kuwait, and Minister Eng Eulogio Del Pino, from Venezuela, have all left their ministerial posts. These four men played an important role in helping OPEC and non-OPEC producers reach the historic and landmark decisions of last year, and the Conference extended its appreciation for their commitment to the work of the Organization.

Separately, the Conference congratulated their incoming replacements: Ing Carlos Pérez, the new Minister of Hydrocarbons of Ecuador; Pascal Houangni Ambouroue, the new Minister of Petroleum and Hydrocarbons of Gabon; Issam A Almarzooq, Kuwait's Minister of Oil and Minister of Electricity and Water; and, finally, Dr Nelson P Martínez, the new People's Minister of Petroleum of Venezuela.

*Dr Mohammed Bin Saleh Al-Sada, Minister of Energy and Industry, Qatar.*

*Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources, Saudi Arabia, and President of the OPEC Conference.*

While the new Ministers and their respective teams will continue the work of their predecessors, joining other Member Countries in the hard work ahead, they continue to display optimism for the future. During his address to all delegates, the Conference President said, OPEC "has a fundamental interest in the health of the global economy and the worldwide energy industry." It must necessarily be so in order for appropriate levels of


*Members of OPEC Management (l–r): Dr Hojatollah Ghanimi Fard, Head, Petroleum Studies Department; Asma Muttawa, General Legal Counsel; Hasan Hafidh, Head, Public Relations and Information Department; Shakir Mahmoud A Al Rifaiey, Head, Office of the Secretary General; ...*

*Suhail Mohamed Al Mazrouei, Minister of Energy, United Arab Emirates.*

*Dr Nelson Martínez, People's Minister of Petroleum, Venezuela.*

investment to be maintained and for technological progress to continue to be encouraged and nurtured. "The task in front of us is admittedly challenging and complex, but I'm confident that by working together we can and will accomplish our goals for the mutual benefit of all," he said.

The next meeting of the OPEC Conference will convene in Vienna on November 30, 2017.

*... (l–r) Abdullah Alakhawand, Head, Administration and IT Services Department; Jose Luis Mora, Head, Finance and Human Resources Department; Dr Adedapo Odulaja, Head, Data Services Department; and Oswaldo Tapia, Head, Energy Studies Department.*


*About 250 members of the press were accredited for the Conference.*


*Ministers and delegates to the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting gathered for a group photograph.*


*Press waiting in the lobby of OPEC.*

The press conference held after the meetings.

# Impressions of the 172nd OPEC Conference and the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting ...

OPEC's Eithne Treanor conducting coverage of the event.

Khalid A Al-Falih (centre l), President of the OPEC Conference and Minister of Energy, Industry and Mineral Resources, Saudi Arabia; and Alexander Novak (centre r), Minister of Energy, Russian Federation; speak to the press after co-chairing the 2nd OPEC and non-OPEC Ministerial Meeting.

# OPEC oil ministers discuss market, ambitions at home

***The following brief interviews were conducted by the OPEC Secretariat's* OPEC Bulletin *team with high-level OPEC officials, who attended the 172nd Meeting of the OPEC Conference on May 25.***

## *Eng Carlos E Pérez*

*Minister of Hydrocarbons, Ecuador*

Eng Carlos E Pérez was appointed as Ecuador's Minister of Hydrocarbons just before the last OPEC Conference, held on May 25 in Vienna. The change had taken place one day before the Conference and Pérez was attending for the first time. "I am enjoying it," he told the *OPEC Bulletin*, smiling.

Pérez added that he finds the OPEC and non-OPEC dialogues very positive. "It's very good that we have opened up and non-OPEC countries are participating with these meetings and agreements," he said. "It makes it much more interesting — and we have a larger producer volume in talks so I think it brings a lot of benefit to the Organization and to the industry as a whole."

He said that after the market has stabilized more, Ecuador hopes to see its production increase, adding that Ecuador has a lot of potential to do so. It's a matter of having the right type of contracts in place and making them attractive for investors, he said. The country currently produces 525,000 b/d of crude, with the agreed-upon production adjustments in place, and has pipelines that are capable of moving 800,000 b/d. "We have the capacity to grow in four or five years, but it depends of course on the interest for investment [by] foreign and non-governmental companies that will be looking at additional reserves and production later on," stated Pérez.

"I think the investors are interested. I think it's just a matter of having the right tools in place to make it attractive — and, in the case of the country, to make sure they understand there is a stable environment for them to invest and clear rules. From then on things will take care of themselves." Pérez also noted that the reservoirs and reserves are there, so companies looking for additional production may be interested in making investments.

Regarding the downstream, the previous government had intended to set up a new refinery capable of producing about 300,000 b/d of products but had not found the right investors. "So the task for the new government is to try and get that interest from companies that are willing to invest in that refinery," he said. "Hopefully we can achieve that during the next four years."

## *Gabriel Mbaga Obiang Lima*

*Equatorial Guinea's Minister of Industry, Mines and Energy*


Equatorial Guinea's Minister of Industry, Mines and Energy, Gabriel Mbaga Obiang Lima, stated he was very pleased that OPEC had accepted his country's request to join the Organization. The decision was taken during the 172nd Meeting of the Conference on May 25 and was announced when all Ministers briefly exited their closed talk session for a photo opportunity with the newest OPEC Member.

Obiang Lima said the country decided to join OPEC after enduring the struggles that all producers had been through following the oil price drop that started in mid-2014. "We believe that it is better that oil producers work together" he said, and stated that it is very important to join an organization like OPEC that is able to provide information which helps in taking future decisions related to projects. The government decided it was "clearly the best moment", but Obiang Lima added the country also joined because there are a lot of OPEC Members with a lot of experience and, "we can exchange that experience and allow us to go on to the next phase (of development)."

He stated that OPEC has fared well over the years and added that it has become an extremely relevant global organization. "Usually you know the relevance of an organization not in the good times, but in the bad times, and this has clearly been a good example because OPEC has stepped in at a very important moment. We believe it has stabilized very volatile pricing and we believe that by continuing to work together, we can continue to see benefits for a long time for everybody."

### Cooperation important

Obiang Lima said he has learned a lot through the OPEC and non-OPEC talks. He added that he thinks such cooperation is very important and points out that all producers have equal interest in the situation. "We are exporters and as exporters we need to make sure we have an equitable supply and price, because that will allow us to continue with our projects and continue with our investment. Not having the right price will impact us and in the future it will impact consumers too." He added that it is very important that non-OPEC producers continue to work with OPEC Members.

Equatorial Guinea is currently producing 348,000 barrels of oil equivalent/day, which includes crude oil, condensate, LPG and LNG. Crude oil alone accounts for around 200,000 b/d, said the Minister. As a very small country, it is focusing more on exploration, refining and exporting. Much of the product from refineries is for export, he added.

"We are focusing more on exploration and one of the key focus areas is gas, but still we are producing oil. We believe the refining sector is a very important stage for a country like Equatorial Guinea, so we can have added value for our products rather than just exporting the crude."

## *Jabbar Ali Hussein Al-Luiebi*

*Iraq's Minister of Oil*

Jabbar Ali Hussein Al-Luiebi, Iraq's Minister of Oil, finds the OPEC and non-OPEC talks very exciting, useful and successful. "On top of everything, they are very successful. There are very fruitful discussions with mutual understanding," he proclaimed. "We have exchanged ideas between us and reached good resolutions, the main one being the extension of the [voluntary production adjustments] for a period of another nine months."

He predicts that OPEC and non-OPEC talks will witness increasing levels of understanding, and that even deeper discussions may ensue. "I think during the last five months since last November's Conference, non-OPEC countries have collaborated greatly with OPEC countries, and conformity is high," he said. "There are a lot of ideas being exchanged, and I hope that this will continue to be strengthened even more."

Meanwhile, he stated that Iraq is in full agreement with OPEC and strongly supports its resolutions, adding it will play any role necessary with the other countries in the extension [of the 'Declaration of Cooperation']. "Iraq is committed to conformity and complying with OPEC resolutions," he said. "We have control over our exports and we are in line with OPEC."

### Future plans

Looking to the future, he explained that planned projects are going ahead as scheduled and that the country is witnessing prosperity in all energy sectors, including oil and gas. "We are focusing more on upstream for the coming years, but now we are paying more attention to gas utilization because we have about 3,000 standard cubic feet of associated gas, about 45 per cent of it being utilized, whereas 55 per cent is being burned. Thus, we are on a fast track to use gas because gas is clean energy, and there is a lot of revenue from gas because it has condensate and associated liquids, which will have a significant impact on our revenues."

Some sections of Iraq's refineries have been hit by militants, he said, adding that the country's largest refinery in Baiji was completely wrecked. Now there is a fast-track plan to rehabilitate it, while four other refineries have been tendered on an investment basis this year. "We are moving very fast on the refinery sector, as well as on the upstream and gas sectors."

The country continues to face numerous challenges, he noted, including political instability and security issues. Nevertheless, he expressed hope that stability would soon return. Additionally, he noted that Iraq was recently able to avoid the danger of a complete financial collapse during 2016. Fortunately the country passed this phase successfully, he said, "and now we are in the process of rebuilding our country — economically, socially and in other aspects."

## *Dr Emmanuel Ibe Kachikwu*

*Nigeria's Minister of State for Petroleum Resources*

Dr Emmanuel Ibe Kachikwu, Nigeria's Minister of State for Petroleum Resources, said he feels extremely positive about the OPEC and non-OPEC talks which have been taking place over the past months. "I think the whole idea of getting both OPEC and non-OPEC countries together was a fantastic idea," he said. "We all pushed for it, and the sheer momentum that has gathered and what it has done for the industry has been unbelievable," he said.

"More importantly, it's helped forge unity, even [among] OPEC Members," he said. "All in all, it's been good."

"I think the Secretariat has done an excellent job, while taking on an additional workload," Kachikwu said. A year ago, he could not have foreseen the level of success that the talks have reached today. "I didn't think we would get this sort of momentum and unity between OPEC and non-OPEC countries that easily. But I always felt cooperation was a solution. I always advocated for it .... The more universality we can bring to this relationship, the more stability we bring to the market — so I am happy with what we have achieved so far."

Regarding his country's oil industry, Kachikwu stated that investment is needed to maintain essential work. Nigeria's normal production level is about 2.2m b/d and the government would like to raise it to 3m b/d. "Just to get fields online and cap them will require an average of about $10 billion per year in investments over the next three to four years," he noted.

"There are also some dedicated projects in the Bonga oil field," he said, adding that Italy's Agip plans to spend about $10bn, while Royal Dutch Shell is hoping to spend $10–11bn on the field.

"We are fairly close to identifying dedicated investments upstream," he said. "Downstream is a challenge. We need to [invest in our] refineries. [We] need to do pipelines. We've estimated the infrastructure gap in the midstream and downstream to be about $30–40bn and that is one of the things we are going to be looking at." He further stated that some of the required investment could come from Nigerians with investment capabilities, rather than being restricted to investors abroad.

Kachikwu commented on direct purchase agreements, which were introduced last year, as well as associated crude-for-product exchanges, stating that refineries aren't working well and are only producing about 10–15 per cent of the country's requirements, with most products being imported. Facing this problem, the Petroleum Ministry has decided that rather than have middle men sell the country's products and [import finished products], it has tried "to achieve synergy by giving the crude to an established refinery to process it and bring it back to us." Doing this, it has saved billions of dollars in his first year as Minister. "It's worth the effort," he said.

### Refining investment

However, this is not a sustainable, long-term solution. "The refineries need to be repaired [...] which we are hoping to do by 2019–20. But over and above that, we want those involved in this trading to begin to invest in refineries," he said. "I think it's a shame that we are still importing so much product. When the government came in two years ago, that was a major concern for us."

In the meantime, the sector has been stabilized and fuel queues removed. He added that supplies are better, but there is still a fundamental need to focus on local demand.

During the Meeting of the Conference, back in his country, the first part of the Petroleum Industry Bill was passed by the Nigerian Senate. This was welcome news, though Kachikwu added that there are several components to the bill. "[The Senate] just passed the first one today, so it's a landmark achievement," he said. It still requires approval from the House of Representatives and the President. "But it's a long process [and] we have worked collaboratively with the Senate. I am happy to hear that it got passed today."

# 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting


*Co-chairs Khalid A Al-Falih (c), President of the OPEC Conference, and Minister of Energy, Industry and Mineral Resources of the Kingdom of Saudi Arabia, and Alexander Novak (l), Minister of Energy of the Russian Federation; with Mohammad Sanusi Barkindo (r), OPEC Secretary General.*

*The 2nd Ministerial Meeting of OPEC and non-OPEC signatories to the 'Declaration of Cooperation' took place in Vienna in the afternoon of Thursday, May 25, 2017. Attended by delegations from ten participating non-OPEC oil-producing countries and all 14 of the Organization's Member Countries, the meeting was co-chaired by* ***Khalid A Al-Falih****, President of the OPEC Conference, and Minister of Energy, Industry and Mineral Resources of the Kingdom of Saudi Arabia. He was joined by* ***Alexander Novak****, Minister of Energy of the Russian Federation, who also co-chaired the 1st OPEC and non-OPEC Ministerial Meeting in December. The* OPEC Bulletin *provides the following overview of the meeting.*

*The late Natiq Aliyev, former Minister of Industry and Energy, Azerbaijan (see obituary on p117).*

*Shaikh Mohamed Al-Khalifa, Minister of Oil, Bahrain.*

*Pehin Datu Singamanteri Colonel (B) Dato Seri Setia (Dr) Awang Haji Mohammad Yasmin Bin Haji Umar, Minister of Energy and Industry at the Prime Minister's Office, EIDPMO, Brunei Darussalam.*

The oil market has seen some interesting developments in the approximately six months since historic and landmark decisions were reached by OPEC's 13 Member Countries and ten participating non-OPEC oil-producing countries. All 24 countries were signatories of the joint 'Declaration of Cooperation', which resulted from the 1st Ministerial Meeting of OPEC and non-OPEC producers on December 10, 2016, and all of them met once again on May 25, 2017, at the OPEC Secretariat headquarters, after the conclusion of the 172nd Meeting of the OPEC Conference, to consider recent market developments and discuss the possibility of extending the original decision.

At the plenary session, delegates to this 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting first recalled the November 30, 2016, decision by OPEC Member Countries to implement a 1.2m b/d production adjustment effective January 1, 2017, for a six-month period, and then reviewed the subsequent decision of participating non-OPEC producers, who joined OPEC in the 'Declaration of Cooperation' to implement a production adjustment of nearly 600,000 b/d on December 10, 2016, for the same period.

## Important for stability

In his opening address to the plenary, Conference President Al-Falih said the joint 'Declaration of Cooperation' had "played an important role in moving the market toward stability." He added that "in the absence of the [decision], the markets would have remained aimless."

The plenary noted that the 14 OPEC Member Countries — the Organization's 13 Member Countries in

*Kanat Bozumbayev, Minister of Energy, Kazakhstan.*

*Datuk Seri Abdul Rahman Dahlan, Minister in the Prime Minister's Department, Minister in charge of Oil & Gas, Malaysia.*

*Dr Aldo Flores-Quiroga, Deputy Secretary of Energy for Hydrocarbons, Mexico.*

addition to new member Equatorial Guinea, one of the original non-OPEC signatories of the Declaration — had met earlier in the day, before the start of the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting, at the 172nd Meeting of the OPEC Conference. There delegates had taken into account current oil market conditions, analysed oil market developments since the last OPEC Conference in November, reviewed the oil market outlook for the remainder of 2017, and considered the reasons for an extension of the production adjustment.

The participating non-OPEC Parties were Azerbaijan, the Kingdom of Bahrain, Brunei Darussalam, Kazakhstan, Malaysia, Mexico, the Sultanate of Oman, the Russian Federation, the Republic of Sudan and the Republic of South Sudan.

## Exceptional opportunity

At the opening, the Conference President said the meeting was "an exceptional opportunity to further strengthen the foundation of cooperation between both OPEC and non-OPEC [countries]." It was a chance "to build more robust mechanisms to collaborate for the benefit of all."

The cooperative spirit that characterized deliberations at the meeting seemed to bear this out. And after some discussion, all Parties attending the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting recognized the need for continuing cooperation among oil exporting countries in order to achieve lasting stability in the oil market — and decided to extend the production adjustment, which originally started January 1, 2017, for a further period of nine months, beginning July 1, 2017.

In announcing their decision, the 14 OPEC Member Countries and ten participating non-OPEC producing countries underscored the importance of continuing efforts to help stabilize the oil market in the interest of all oil producers and consumers, and reaffirmed their commitment, individually and collectively, to the decision.

It was noted that the commitment of all 24 countries to the voluntary adjustment decision was clearly evident from the unprecedented conformity levels reached by the date of the meeting. These had been monitored by the Joint Ministerial Monitoring Committee (JMMC) and the Joint Technical Committee (JTC), both of which

had been created as a result of the December meeting. The JMMC and JTC continuously examined oil market data and production levels, and in so doing, "informed, guided and enhanced the work" of the signatories, said the Conference President.

A day earlier, on May 24, the JMMC had convened in Vienna for its third meeting. Basing its deliberations on the *Report of the Joint OPEC/non-OPEC Technical Committee (JTC) for the month of April 2017*, JMMC delegates stated that participating producing countries had shown "steady and convincing progress" towards full conformity with their respective adjustments in production, and recommended the nine-month extension.

In the course of the meeting, delegates also expressed gratitude for the contributions of Issam A Almarzooq of Kuwait, Chair of the JMMC, and Alexander Novak of the Russian Federation, who served as its co-chair. The two Ministers will continue to serve in their respective roles following the decision to extend the mandate of the JMMC and the JTC. Over the months since the December decision, both bodies have provided valuable support and input, and have ensured the transparency required for the timely implementation of the decisions taken last year.

## Monitoring bodies continue their work

The JMMC stated that it would continue monitoring conformity levels, as well as market conditions, and would leave the possibility open to recommend, if necessary, further adjustment actions. Its next meeting will be held in the Russian Federation in July.

The JTC, with ongoing support from the OPEC Secretariat, will continue to provide monthly technical assistance to the bodies of the 'Declaration of Cooperation' — reaffirming the overall commitment of OPEC and participating non-OPEC countries to the process of cooperation.

At the conclusion of the 2nd Ministerial Meeting, the Parties agreed to continue regularly reviewing the status of their cooperation at the technical and ministerial levels. They also further agreed to continue strengthening their cooperation by, for example, facilitating the exchange of joint analyses and outlooks — with the overall aim of ensuring a sustainable oil market for the benefit of producers, consumers, the industry and the global economy.

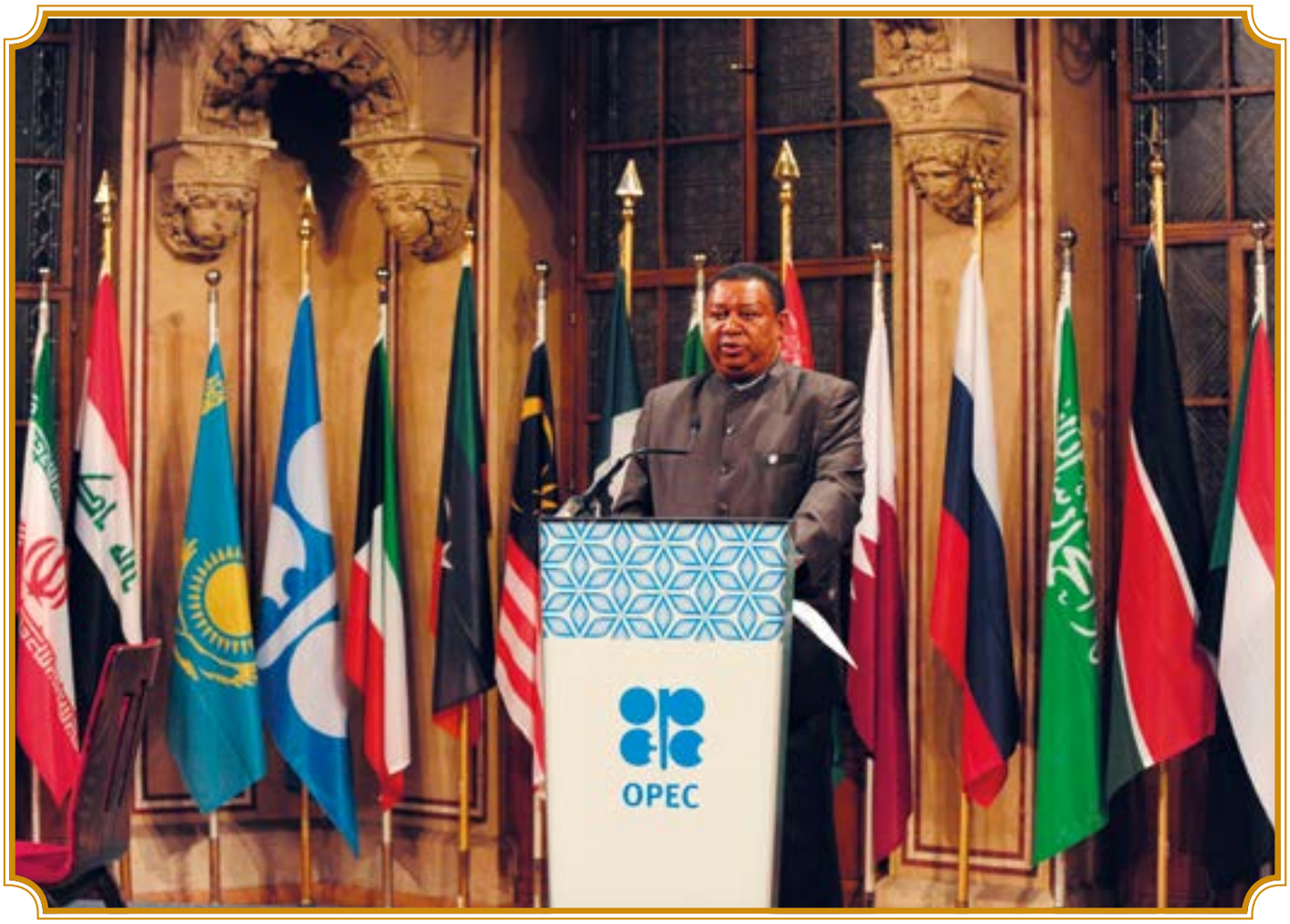
*Salim Al Aufi, Undersecretary at the Ministry of Oil and Gas, Oman.*


*Alexander Novak, Minister of Energy, Russian Federation.*

As the President of the Conference said at the start of the 2nd OPEC and non-OPEC Producing Countries' Ministerial Meeting, all Parties are "determined to deepen the institutionalization of the framework for cooperation between OPEC and non-OPEC countries." This can help to improve the future adaptation of producing countries to market cycles, he said.

"The oil industry is cyclical by nature," he added. "But with regular interactions at both the policy and technical levels, and by working together toward common goals, we can help promote healthy markets."

# OPEC and non-OPEC countries attend gala dinner




*Mohammad Sanusi Barkindo, OPEC Secretary General, speaks at the first gala dinner for OPEC and non-OPEC countries.*

The ministers and representatives of the OPEC and non-OPEC countries that were signatories to the 'Declaration of Cooperation' participated in their first Gala Dinner on May 24, 2017, on the eve of the 172nd Meeting of the OPEC Conference, and the 2nd OPEC and non-OPEC Ministerial Meeting. The event was held at the spectacular and unique Palais Ferstel in Vienna's famous first district.

Although the group of dignitaries had met informally once before — for a breakfast on the historical date of December 10 when the 'Declaration of Cooperation' was signed — the Gala Dinner marked the first formal evening event. It also represented an opportunity to deepen personal relationships — and the hope was expressed that it may be the start of a wonderful tradition.

"It is great to see so many enthusiastic and committed people here — gathered together not just for the sake of the oil industry but for the well-being of the global economy and the prosperity of the world at large," said Khalid A Al-Falih, Minister of Energy, Industry and Mineral

Resources of Saudi Arabia, and President of the OPEC Conference in his opening remarks.

"The consultations and diplomacy efforts that led to this began during 2016. They were unparalleled in the history of OPEC."

Al-Falih discussed the process behind the talks leading to the successful OPEC and non-OPEC decisions. He also described the feeling of urgency that had spurred all participants on, noting that the talks represented a new chapter in OPEC and non-OPEC relations. Since the 'Declaration of Cooperation' was signed some positive indicators had returned to the market but important issues remain.

Barkindo said that Minister Al-Falih assumed the OPEC Presidency at the commencement of these landmark decisions and with a new framework that had yet to be tested. He lauded Al-Falih's previous work as Saudi Aramco's President and CEO prior to taking up his post as Energy Minister. "In his five-and-a-half year tenure as the head of the largest energy company in the world," said Barkindo, "[Al-Falih] led the company's transformation from an oil and gas company to a fully integrated energy and chemicals enterprise."


The Secretary General of OPEC, Mohammad Sanusi Barkindo, also saw the gala dinner as a good opportunity for all in attendance. It is a chance to "sit back, take stock and acknowledge the collective will and heroic efforts of all 24 countries in the 'Declaration of Cooperation'," he said.

He highly praised both the previous President of the Conference, Mohammed Bin Saleh Al-Sada, Qatar's Minister of Energy and Industry, and Al-Falih, the current President. Al-Sada's unwavering focus on the mission and destination of the group "despite often stormy waters" was a cornerstone in the historical achievements, Barkindo said. "Mohammad Al-Sada never gave up. He remained optimistic, even given the prospect of despair."

Barkindo added that Al-Falih has been a major contributor and actor in the OPEC and non-OPEC decisions that had been taken. "As Conference President, he has


*Alexander Novak, Russian Minister of Energy.*


*Khalid A Al-Falih, Saudi Arabian Minister of Energy, Industry and Mineral Resources, and President of the OPEC Conference (r), gave the recitation in honour of Dr Alirio Parra (l).*

been similarly instrumental in pushing these forward with commitment and dedication," he said.

The Secretary General also praised the role of Russian Energy Minister, Alexander Novak, who he described as "the most reliable and dependable bridge in this flourishing dialogue between OPEC and non-OPEC."

Although some doubted a united position with regards to the market rebalancing process could be found among OPEC Member Countries, let alone in combination with non-OPEC producers, the recent decisions have proved that the extensive deliberations and consultations paid off. Even after the joint decision of 10 December was announced, some naysayers refused to believe that any reasonable conformity with the production adjustments could be reached. But they were all mistaken, said Barkindo.

He called the 'Declaration of Cooperation' "unparalleled" in history, adding that given the nature of the market downturn, a collective effort was required. "No one could have done it alone."


*Dr Alirio Parra of Venezuela, a pioneer of the oil industry and witness to history, including the founding of OPEC.*

# Honouring a legend

Later in the evening, participants honoured Dr Alirio Parra of Venezuela, a pioneer of the oil industry and witness to history, including the founding of OPEC. In fact, he is the last surviving witness of the Baghdad meeting which established OPEC in 1960, said Khalid A Al-Falih, Saudi Arabian Minister of Energy, Industry and Mineral Resources, and President of the OPEC Conference, who gave the recitation in Parra's honour.

At that time of OPEC's founding, Parra was an assistant to Venezuela's legendary Minister of Mines and Hydrocarbons, Juan Pablo Pérez Alfonzo. The objective and vision of the Founder Members back in 1960 — to protect the long-term interests of the Organization's Member Countries and to move forward together — is essentially the same one that is still adhered to today, noted Al-Falih.

Al-Falih listed Parra's many impressive accomplishments spanning the decades of his career in the oil industry. These included Parra's time as a member of the Presidential Commission on Oil Nationalization in 1975 in Venezuela, when he participated in the creation of Petroleos de Venezuela SA (PDVSA). Then, as a board member of the company, he spent 15 years helping to shape the company into an efficient, global commercial enterprise, said Al-Falih, including initiating and facilitating development of Orinoco extra-heavy crude. Parra also served as the country's Minister of Energy and Mines (1992–94) and as President of the OPEC Conference.

After Al-Falih's comments, Parra stood at the podium to thank his audience and share his humble delight at receiving the honour given to him. He extended his deep gratitude to the OPEC Secretary General for its extraordinary gesture, adding that Barkindo may already be viewed as one of the most successful Secretaries General since the founding of the Organization.

"What has been accomplished thus far by those here this evening has made a difference to so many people's lives," said Parra, "but everyone must still roll up their sleeves and continue with the journey."

Parra noted that back in 1960 there were many people who believed that OPEC would not last long; but it is still here today — and its best days are yet to come. "I believe that OPEC is currently the most cohesive group of Member Countries in living memory," said Parra to thunderous applause. He is a man who should know.

# OPEC Secretary General welcomes new Crown Prince of the Kingdom of Saudi Arabia, congratulates new Minister of State for Energy Affairs


*HRH Prince Mohammed bin Salman Al Saud, the newly appointed Crown Prince of the Kingdom of Saudi Arabia.*

OPEC Secretary General, Mohammad Sanusi Barkindo, has congratulated HRH Prince Mohammed bin Salman Al Saud on his appointment as the new Crown Prince of the Kingdom of Saudi Arabia following the announcement of the decision in a Royal Decree by King Salman Bin Abdul Aziz Al-Saud, the Custodian of the Two Holy Mosques.

The OPEC Secretary General offered his sincere congratulations, along with those of the staff of the OPEC Secretariat in Vienna, on the auspicious appointment. He said that he had no doubt that the new Crown Prince, in supporting King Salman, would continue the development and renaissance of the Kingdom through Saudi Vision 2030 and achieve great success in serving his country.

He added: "May Allah grant you wisdom, courage and strength to carry out the heavy obligations and duties of this high position, and guide you always on the most propitious path."

Barkindo also thanked HRH Prince Mohammed for his continued engagement with, and support of OPEC. He said that

working with Khalid A Al-Falih of Saudi Arabia, the Kingdom's Minister of Energy, Industry & Mineral Resources and the current OPEC President, had underlined to him the important role that the Crown Prince played in the decisions taken by OPEC and non-OPEC at the end of last year, and most recently in May 2017 through the extension of the 'Declaration of Cooperation'.

The Secretary General also conveyed his sincere best wishes on the joyful occasion of Eid Al-Fitr Al-Mubarak, and his hopes that this special day brings peace, happiness and prosperity to everyone.

In a separate message, the OPEC Secretary General also congratulated HRH Prince Abdul Aziz Bin Salman on his appointment as the new Minister of State for Energy Affairs of the Kingdom of Saudi Arabia by Royal Decree by King Salman Bin Abdul Aziz Al-Saud, the Custodian of the Two Holy Mosques.

The OPEC Secretary General conveyed his sincere congratulations, along with those of the staff of the OPEC Secretariat in Vienna, on the appointment, and expressed his sincere wishes for a successful "period of tenure".

*HRH Prince Abdul Aziz Bin Salman, the newly appointed Minister of State for Energy Affairs of the Kingdom of Saudi Arabia.*

# President Rouhani re-elected in landslide election

ddp images/abaca press

Iranian President, Hassan Rouhani.

**After an intense presidential campaign, Dr Hassan Rouhani, President of the Islamic Republic of Iran, was overwhelmingly re-elected during polling on May 19. The *OPEC Bulletin* provides the following global round-up of his electoral victory.**


*President Rouhani casts his vote during the presidential election in May 2017.*

These were the first presidential elections in the Islamic Republic of Iran since the country's nuclear agreement of 2015. Turnout was impressive, with 73 per cent of the country's 55 million eligible voters participating. In fact, given the long lines at many polling stations, voting had to be extended by five hours on Friday evening, according to several Iranian news reports.

In the end, out of a total 41 million votes cast, Presidential incumbent Hassan Rouhani won 23.5 million (about 57 per cent), while the second closest candidate, Ebrahim Raisi, received 15.7 million votes (about 38.5 per cent).

When he was first elected in 2013, Rouhani had received a clear mandate based on a solid electoral victory with a turnout of more than 51 per cent. Rouhani's mandate has now been extended. He plans to continue with efforts to help the economy grow, and to stimulate investments to the oil and gas industry.

Rouhani has, at various occasions, discussed the challenges and opportunities facing the oil market. In a meeting with OPEC Secretary General, Mohammad Sanusi Barkindo, in Tehran on September 6, 2016, accompanied by Eng Bijan Namdar Zanganeh, Minister of Petroleum, Rouhani noted that IR Iran had suffered greatly under sanctions.

One of the President's key objectives during his tenure is thus to see the end of all sanctions against the Islamic Republic of Iran — and to make efforts to ensure that this translates into economic benefits for the country and its many important industries.

In the meantime, Rouhani said the Islamic Republic of Iran would continue to support OPEC's important efforts to restore market stability for the benefit of producers, consumers, the industry and the global economy.

During their September meeting, the Secretary General thanked President Rouhani for his kind and encouraging words, and offered his gratitude for IR Iran's support of both his candidacy for Secretary General and the work of the OPEC Secretariat in general.

The Secretary General also underlined the key role IR Iran has played over the years within OPEC to achieve market stability and fair prices — and said that with Rouhani's guidance IR Iran had achieved "prosperity, stability and progress."

Rouhani, who is 69 years old, is a senior cleric who also served as an adviser to the country's Supreme Leader, Ayatollah Ali Khamenei. Under the former president, Mohammad Khatami, Rouhani served as the chief negotiator for IR Iran's nuclear energy programme. He also served as Secretary of Iran's Supreme National Security Council for 16 years, having been appointed in 1989.

After the electoral results were announced on May 20, tens of thousands of Rouhani supporters poured onto the streets of Tehran and other Iranian cities to celebrate. Fireworks also went off in Vali-e-Asr Square.

In a post to *Instagram* after his victory, Rouhani wrote: "Great people of Iran, you are the true winners of this election."

# OFID Director-General receives Lifetime Achievement Award

**Suleiman Jasir Al-Herbish** has been presented with the 2017 Abdullah Bin Hamad Al-Attiyah International Energy Award for Lifetime Achievement for the Advancement of the Organization of the Petroleum Exporting Countries (OPEC).

By Steve Hughes

OFID

*Suleiman Jasir Al-Herbish, Director-General of the OPEC Fund for International Development (OFID).*

Praising Al-Herbish's efforts toward universal energy poverty alleviation, Abdullah Bin Hamad Al-Attiyah, Chairman of the Al-Attiyah Foundation and former Deputy Prime Minister and Minister of Energy and Industry of Qatar, said Al-Herbish had "championed [the cause] tirelessly at the highest level."

Al-Attiyah told Al-Herbish: "Since assuming office, you have led numerous initiatives to make the OPEC Fund For International Devepment's (OFID's) work more relevant and efficient, which has led to milestone partnership agreements with a large number of bilateral and multilateral partners."

Accepting the award, Al-Herbish thanked the selection committee, Al-Attiyah and the foundation. He praised the Member Countries of OFID and OPEC, including his own country, the Kingdom of Saudi Arabia: "It is only through their unwavering support that I have been able to dedicate my career to OPEC, spending 13 years as a member of the Board of Governors. I have also been able to commit fully to international development — specifically to our Energy for the Poor advocacy at OFID. I am truly thankful," he said.

Al-Herbish dedicated the award to his family and made special mention of friends "who have stood by me over the years." He further dedicated the award to the staff of OFID: "These people have supported our noble mission to eradicate energy poverty. They are the ones that have ensured access to energy was recognized the world over as the seventh Sustainable Development Goal after it was ignored under the Millennium Development Goals."

Al-Herbish was among seven distinguished winners to receive awards from the Abdullah Bin Hamad Al-Attiyah International Foundation for Energy and Sustainable Development at a ceremony and gala dinner held at the Sheraton Hotel, Doha.

The foundation established the annual awards in 2013. They recognize outstanding accomplishment in the advancement of the global energy industry. Winners must show distinct personal achievement in their sector over a consistent career spanning at least 30 years.

An independent international selection committee invited by the foundation selects the winners. This year's committee included: Dr Majid A Al-Moneef, Advisor to the Royal Court of the Kingdom of Saudi Arabia; Adnan Z Amin, Director-General, International Renewable Energy Agency; Hamad Rashid Al-Mohannadi, Senior Advisor, Qatar Petroleum; Claude Mandil, former Executive Director, International Energy Agency; Dr Bassam Fattouh, Director, Oxford Institute for Energy Studies; and Margaret McQuaile, former Senior Correspondent, S&P Global Platts.


Gulf Intelligence

*Suleiman J Al-Herbish (r), Director-General of the OPEC Fund for International Development, receiving the Lifetime Achievement Award from Abdullah Bin Hamad Al-Attiyah, Chairman of the Al-Attiyah Foundation and former Deputy Prime Minister and Minister of Energy and Industry of Qatar.*

**Suleiman J Al-Herbish** has been OFID Director-General since 2003. He has made OFID's work more relevant and visible, and strengthened cooperation with other development organizations. His second book entitled *Uniting against poverty: OFID's Suleiman Jasir Al-Herbish and the fight for sustainable development*, was recently published. Here are a few edited extracts from interviews with Mr Al-Herbish.


Gulf Intelligence

*Suleiman J Al-Herbish.*

“My family was not poor, but my whole city — Ar Rass in Saudi Arabia — was poor in terms of electricity, facilities and infrastructure. When I was a child, we didn’t even hear about electricity. I would study until midnight under the light of the kerosene lantern with my mother at my side (I was the only boy and she spoiled me). When I was done with my homework, she would blow out the flame with a “Pfffeww”. Later, I moved to Riyadh. Not even then did I have electricity. In the evenings I would go to the mosques — where there was electricity — to study. This problem has always remained in the back of my mind. It is something, I think, that has driven me on.

Some 1.2 billion people still live without electricity and 2.7bn people are without clean cooking facilities. This has been my focus for most of my career. So for me, becoming Director-General of OFID was like having the best job in the world.

One very special high point of my career was the $1 billion resource replenishment we received from our Member Countries in 2012. This was the first resource boost in 30 years and a resounding endorsement of our work. I was in the OFID headquarters shortly after, preparing for a follow-up meeting. One of my colleagues said: “We need you in the conference room. Please, just one minute.” I went and found everybody was there. They applauded me. And I have to admit that I cried. And my colleagues applauded me again. There are many of us in OFID that are not just with the organization. We are *of* the organization.

Another highlight was the inclusion of energy poverty eradication in the outcome document of the Third OPEC Summit in Riyadh in 2007. Not many people know that the relevant article of the Riyadh Declaration was actually drafted here in OFID. We were the ones who took the idea to our Member Countries. They took it on board and made it a decision of the Summit. Their call — on all OPEC aid institutions including OFID — was the springboard that launched OFID on a new path and marked a major watershed in terms of OFID’s position in the international development community.

But I think I speak for everyone at OFID when I say that our most momentous achievement is the inclusion of energy poverty eradication as a stand-alone goal in the 2030 Development Agenda. It represents the outcome of seven or eight years of hard advocacy. We were the ones — working with our partners — who brought this issue to the attention of the world. There is still a distance to go to deliver on the agenda, but energy access is finally *on* the agenda. It is also now recognized as central to the achievement of all Sustainable Development Goals.”


*Suleiman J Al-Herbish.*

International Oil Summit 2017

# Light at the end of the tunnel

*Mohammad Sanusi Barkindo, OPEC Secretary General.*

***As delegates gathered in Paris for the 18th edition of the annual International Oil Summit in April 2017, it was clear that events of the past year or so were at the centre of discussions. There was much talk of OPEC's decision to adjust production in November 2016, and of its 'Declaration of Cooperation' with non-OPEC producers in December 2016, which had focused on bringing balance back to the market and returning to sustainable stability. The* OPEC Bulletin *reports on the participation of the OPEC Secretary General, Mohammad Sanusi Barkindo, who delivered a speech looking at how the rebalancing of the market was progressing.***

It was evident from OPEC Secretary General, Mohammad Sanusi Barkindo, and his fellow session panelists Dr Sun Xiansheng, the Secretary General of the International Energy Forum (IEF), and Keisuke Sadamori, the Director of the Energy Markets and Security Division at the International Energy Agency (IEA), that since last year's International Oil Summit in April 2016, much had changed in terms of market sentiment and outlooks.

In a session moderated by Claude Mandil, a former Executive Director of the IEA, Barkindo recalled the atmosphere at last year's Summit. He said that "in conversations with colleagues that were in attendance I heard expressions of bearish sentiment, a sense of foreboding about the industry's near-term future, and little talk of industry expansion and investment. The prevalent feeling was gloomy and downbeat." He compared this with the more positive impression he had gotten from participants at this year's event.

In terms of numbers, Barkindo noted that total OECD commercial oil stocks in April 2016 were around 350m b above the five-year average, and expectations were for them to continue to rise. They reached 380m b in July 2016. He said that WTI and Brent combined net-long positions were at 620,000 contracts in mid-April, with a pessimistic market outlook among traders for the coming months. Combined WTI and Brent net-long positions fell to below 400,000 contracts by mid-August. "And the average ICE Brent price in the first four months of 2016 was around $30/b," he added.

He also highlighted that "there was also no clear direction [back in April 2016], despite the efforts made at the Doha-1 meeting in February 2016, between Qatar, Saudi Arabia, Venezuela and Russia, and the Doha-2 meeting in April 2016, with around 20 OPEC and non-OPEC producers present, as to how the industry might overcome the downturn that had begun in mid-2014, and, in turn, rebalance supply and demand. Producers, both OPEC and non-OPEC, had lost their compass and direction!"

## OPEC and non-OPEC decisions

In this regard, the Secretary General noted the importance of the extensive consultations embarked on by OPEC Member Countries, and between OPEC and non-OPEC producing nations in the second half of last year. He said that "these consultations, both formal and informal, across various global capitals, were unparalleled in the history of OPEC." There was a consensus, Barkindo added, "that stability on a sustainable basis had eluded the industry since the summer of 2014, to the detriment of all industry stakeholders."

The extensive consultations, he said, "were undertaken with commitment, great diligence and rare courage that facilitated flexibility, accommodation and compromise among the respective parties." These eventually led to the landmark decisions taken at the 170th (Extraordinary) Meeting of the OPEC Conference in Algiers, on September 28, 2016, the 171st Ministerial Conference in Vienna on November 30, 2016, and the 'Declaration of Cooperation' between OPEC and non-OPEC producers in Vienna on December 10, 2016.

He added that "for the first time in the history of the industry,

13 OPEC nations and 11 non-OPEC participating countries came together as strategic stakeholders, to help rescue and stabilize the global oil industry — one that has been vital to the development of modern civilization."

## Market sentiment improves

Following these landmark decisions, Barkindo said that it was evident that market optimism began to improve. The decision in Algiers saw a "rise in net long-positions and a narrowing of the contango, as well as extending "the hand of unity to non-OPEC producers to broaden the global platform of voluntary production adjustments."

Market optimism advanced again following OPEC's decision on November 30, stated Barkindo, with WTI and Brent combined net-long positions increasing from close to 500,000 contracts on November 29, 2016, to 763,000 on January 3, 2017. It then improved further in the early part of 2017, particularly following the high level of conformity to the production adjustments seen in January.

For the month of January, he said, "OPEC and non-OPEC nations achieved a conformity level of 86 per cent, which certainly seemed to surprise the market to the upside." WTI and Brent combined net-long positions reach 921,000 contracts on February 21, an additional rise of 21 per cent from January 3.

"It was a period of lower volatility, and more stability in oil prices," he said.

## Bumps along the rebalancing path

However, despite the expectation of improved levels of OPEC and non-OPEC conformity in February, which proved to be true, with overall conformity at 94 per cent, Barkindo stated that "we saw a turn in market sentiment in early March, with financial players significantly reducing their net-long positions."

It is important to stress, he added, "that this development was not totally unexpected. The first quarter of every year has a number of seasonal trends that can soften the market."

He said that "the first quarter is a period when significant levels or refinery throughput in the US is often shut-in. In January and February this year, 1m b/d of throughput was shut down for maintenance. For these two months, this equates to approximately 60m b."

On top of this, he also noted rising production from a number of non-OPEC nations, particularly in the US from tight oil, reflecting expectations for much greater quantities to come from non-OPEC in 2017, as well as recalling "the fourth quarter of 2016 was a period of significantly rising supplies that were working their way through the market in the early part of 2017."

## Positivity returns

Barkindo stressed that "in recent weeks we have seen positive sentiment return, driven by expectations for further improvement in OPEC and non-OPEC conformity, which ended up at 98 per cent in March, and signs that market rebalancing is taking place."

He referenced the fact that total OECD commercial oil stocks in March fell by 23m b, the second consecutive monthly drop. The total level at the time of the Summit was 275m b above the five-year average, compared with 314m b in February, and 356m b in the same month in 2016.

He stressed that "outside of the US, we believe the global trend of destocking is broadly on track. Moreover, we are also seeing numbers from industry stating that crude in floating storage has fallen by over 40m b since the beginning of the year."

The US has evidently not been reflective of the rest of the world, he said, given rising production there in the first quarter of 2017, but even here the market has now witnessed consecutive weekly crude stock draws.

He also underscored that there was confidence that all 24 participating countries will remain steadfast in honouring their commitments to individually achieve the 100 per cent conformity level to the production adjustments. "These are all signs of a renewed sense of positive momentum and improving stability in the global oil market," he stated.

He emphasized that it is important to appreciate that "the market rebalancing was never going to occur in a linear fashion." There are too many factors at play. "Nonetheless, we are heading in the right direction. Steadily, but surely we are seeing light at the end of the tunnel."

## Longer-term perspective

Barkindo emphasized that the importance of fast-tracking the rebalancing process and returning to market stability is also vital for the medium- to long-term oil outlook, specifically with regard to the investments required for the world's growing oil and energy future.

In the tenth edition of OPEC's *World Oil Outlook* launched last November, he noted that "oil demand is expected to reach over 109m b/d by 2040, an increase of over 16m b/d from 2015 levels."

Moreover, he added, both OPEC and the IEA agree that "there are no expectations for an oil demand peak in the foreseeable future." Oil will clearly remain a fuel of choice in the coming decades.

"This expansion in demand will obviously require significant investments in new barrels and to accommodate for decline rates from existing fields." Overall, he added, OPEC sees oil-related investment requirements of around $10 trillion over the period to 2040. In order to achieve this, he told the audience that "the industry needs timely, adequate and sustainable investment to guarantee security of supply to the global community."

## Lessons learned from the 2014–16 price collapse?

To conclude, Barkindo said he felt it was pertinent to respond directly to one of the questions posed by the Summit's organizers: What lessons have we learned from the 2014–16 price collapse?

Although "the jury is still out," he said he felt able to offer some pointers. "The consequences of the decision of oil-produceing countries to abdicate their traditional responsibilities — related to stability and balance — to the vagaries of the market back in November 2014 have been evident for all to see," he said. "There is once again widespread recognition that on occasions the market needs to be complemented, in the interests of all stakeholders." And, he noted, this is not only confined to oil.

"The market saw the largest percentage price fall in the six episodes of sharp price declines we have observed over the past four decades. The depth and duration of the supply-side led downturn was alarming, and so were the impacts for all stakeholders."

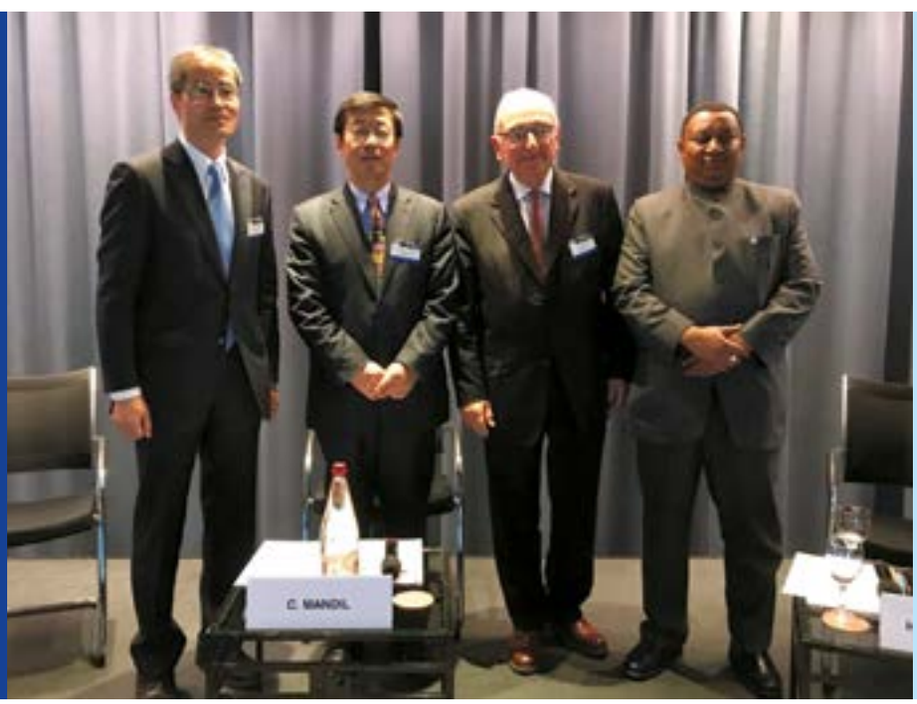
He further noted that "OPEC producers are anticipated to forego revenue losses of more than $1 trillion [and that] the industry has seen a sharp two-year contraction in upstream investments of more than $450 billion." In many consuming countries, this has led to deflationary pressures and as the IMF has highlighted, the global economy overall has seen no net positive benefit, he said.

"The magnitude of these effects has seen growing calls from both producers and consumers to bring forward the market rebalancing, return stability to the market, and ensure the necessary industry investments take place, in a timely fashion."

Additionally, "the broad global platform of 24 producing nations from OPEC and non-OPEC initiated through the 'Declaration of Cooperation' is unparalleled in the history of the oil industry. Given the nature of the downturn, a collective and concerted effort was required." No one could have acted alone, he said.

"Looking ahead, as the 'Declaration of Cooperation' underlines, it is vital that we evolve a framework of permanent and sustained cooperation between all participating nations, given the industry's growing complexity and its inter-connected nature," he said.

While it is evident that a market rebalancing is now moving forward and that some investments — especially those considered short-cycle — are returning, he said it is essential to remain focused on three specific goals: "We need to see the global stock overhang move closer to its five-year average. We need to see the return of more long-cycle investments, the industry's baseload. And we need to ensure sustainable stability in the years and decades ahead."




*Mohammad Sanusi Barkindo (r), OPEC Secretary General, with his fellow session panelists (from l–r): Keisuke Sadamori, the Director of the Energy Markets and Security Division at the International Energy Agency (IEA); Dr Sun Xiansheng, the Secretary General of the International Energy Forum (IEF); and moderator, Claude Mandil.*

Sixth High-level Meeting of the OPEC-Russia Energy Dialogue

# Secretary General meets with Russian Energy Minister, attends economic forum in Russia


*Seen at the St Petersburg International Economic Forum are (l–r): Patrick Pouyanné, Total's Chairman of the Board and Chief Executive Officer; Robert Dudley, BP's Chief Executive; Mohammad Sanusi Barkindo, OPEC Secretary General; Alexander Novak, Russian Federation's Minister of Energy; moderator Elena Cherney, The Wall Street Journal's Canada Bureau Chief and Global Resources Editor; and Khalid A Al-Falih, President of the OPEC Conference, and Saudi Arabian Minister of Energy, Industry and Mineral Resources.*

***In its ongoing efforts to engage in bilateral dialogue with other energy stakeholders around the world, and building on the successful meetings OPEC regularly has with those non-OPEC producers with whom it has established a formal dialogue process, OPEC Secretary General, Mohammad Sanusi Barkindo, and an accompanying delegation of OPEC officials, participated in the Sixth High-level Meeting of the OPEC-Russia Energy Dialogue on May 31, 2017, in Moscow.***

The Sixth High-level Meeting of the OPEC-Russia Energy Dialogue was co-chaired by Alexander Novak, the Minister of Energy of the Russian Federation; Khalid A Al-Falih, Minister of Energy, Industry and Mineral Resources of the Kingdom of Saudi Arabia, who also serves as President of the OPEC Conference; and Mohammad Sanusi Barkindo, Secretary General of OPEC. It was also attended by a delegation of OPEC officials and senior executives of Russia's various national oil companies, as well as representatives of the academic community of the Russian Federation.

During the meeting, officials considered the short-term oil market outlook, and discussed the prospects for the market's medium- and long-term outlook. Some consideration was also given to various projections for non-OPEC supply in 2017 and 2018. Additionally, the Parties recognized a common understanding to expand research and analysis activities.

In a joint *communiqué* published on the day of the meeting, the Parties noted that "the OPEC-Russia Energy Dialogue continues to represent a valuable contribution among producing countries towards collective efforts in support of sustainable market stability."

*At the Sixth High-level Meeting of the OPEC-Russia Energy Dialogue, OPEC officials, headed by OPEC Secretary General, Mohammad Sanusi Barkindo, and Khalid A Al-Falih, President of the OPEC Conference, and Saudi Arabian Minister of Energy, Industry and Mineral Resources, met with Alexander Novak, the Russian Federation's Minister of Energy and other officials from the Russian government. The Dialogue preceded the St Petersburg Economic Forum.*

## Meeting with the Prime Minister

Following the conclusion of the Sixth High-level Meeting of the OPEC-Russia Energy Dialogue, the OPEC Secretary General and accompanying OPEC officials met with the Prime Minister of the Russian Federation, Dmitry Medvedev, at the Prime Minister's residence. The Prime Minister was joined by the Russian Energy Minister.

The Prime Minister welcomed the OPEC delegation to Moscow and emphasized the importance of the energy dialogue with OPEC, which has grown and evolved in recent years. He specifically highlighted the recent

*Khalid A Al-Falih, President of the OPEC Conference, and Saudi Arabian Minister of Energy, Industry and Mineral Resources, being interviewed by the media.*

consultations that took place during the second half of 2016, in which Russia played a key role, which led to the historic 'Declaration of Cooperation' between OPEC and non-OPEC producers. "The good relations between OPEC and Russia have helped the oil market to recover," Medvedev said. "Our coordinated efforts have resulted in a better economic situation for all."

The Secretary General underscored the significance of the understanding that has evolved between OPEC and the Russian federation, particularly through the Energy Ministry. A "constructive, collaborative and intensive dialogue" has achieved "positive results", he said. Without the support of the Russian Federation, the Secretary General said "we could not have reached the consensus needed to sign the 'Declaration of Cooperation'."

Following the meeting with the Prime Minister, Minister Novak and the Secretary General held a joint press conference to respond to questions about the current state of the oil market and the future of the OPEC-Russia Energy Dialogue. The next High-level Meeting of the OPEC-Russia Energy Dialogue will take place in Vienna during the second half of 2018.

## St Petersburg International Economic Forum

The next day, the OPEC Secretary General and his delegation travelled to Russia's second-largest city to attend the St Petersburg International Economic Forum (SPIEF), which was held in the historic city from June 1–3, 2017. While there, he participated in a panel session entitled, 'Hydrocarbon energy: a vestige of the past or the basis for development?'

The session also included the participation of the President of the OPEC Conference, and Saudi Arabian Minister of Energy, Industry and Mineral Resources, Khalid A Al-Falih; the Russian Federation's Minister of Energy, Alexander Novak; BP's Chief Executive, Robert Dudley; Total's Chairman of the Board and Chief Executive Officer, Patrick Pouyanné; and Vice Chairman of IHS Markit, Daniel Yergin.

The session was moderated by Elena Cherney, *The Wall Street Journal's* Canada Bureau Chief and Global Resources Editor.

## Paris Agreement

The first question posed to the panellists by the moderator focused on US President Donald Trump's decision to withdraw from the Paris Climate Change Agreement. Barkindo stated: "In OPEC, we have been playing our part. All of our Member Countries have signed the Paris Agreement and five of our Member Countries — including Saudi Arabia — have ratified it. To achieve our common goal of (keeping a global temperature rise this century well below) 2°C (above pre-industrial levels) through the application of Intended Nationally Determined Contributions (INDCs) without the US, it looks to me very challenging and almost like a task that the world will have to revisit. The issue though goes beyond oil", said Barkindo. "It also has to do with OPEC Members being developing countries."

"All of our Member Countries will be heavily impacted by climate change," he said, "and [will be] doubly impacted by the response measures of rich industrialized countries, which made commitments either under the convention of Kyoto or subsequent resolutions of the process.

## Responsibilities

He added: "OPEC Countries are determined to proceed with our obligations based on the principles of common but differentiated responsibilities."

Responding to a question on how he views the oil market in the future, following the decision on May 25 by OPEC and participating non-OPEC producing nations to extend the voluntary adjustment of oil production by an additional nine months, the Secretary General briefed the audience on the historic 'Declaration of Cooperation' which was signed on December 10 by 24 OPEC and non-OPEC oil-producing countries.

He spoke about how the decision taken in December to adjust oil production by a combined amount of around 1.8 million barrels/day has led to the drawdown of the build-up in oil stocks. Barkindo also lauded the level of conformity by participating countries, saying, in January, it was around 80 per cent, while in April it exceeded 100 per cent.

*Mohammad Sanusi Barkindo (r), OPEC Secretary General, speaks to the press during his visit to the Russian Federation.*

Al-Falih, meanwhile, expressed his commitment to long-term cooperation between OPEC and participating non-OPEC producing nations. "We want to institutionalize the goal of maintaining and strengthening critical cooperation between OPEC and non-OPEC [producing countries]," he said. "I believe we also have good opportunities to expand our cooperation to other areas of mutual interest," he added.

OPEC's Secretary General said the decision was welcomed by many parties, including major oil companies such as BP and Total. The CEOs of both these oil majors also welcomed the decision.

## OPEC/non-OPEC agreement

"I am supportive of what has been done [by OPEC and non-OPEC participating oil-producing nations]," Total's CEO Patrick Pouyanné told the audience. "It is a good deal for everyone," he said.

"I do support the OPEC/non-OPEC agreement," said BP's CEO Robert Dudley. "It brings credibility to the oil market. It brings prices to a level which is healthy for the whole world," he said.

The 3rd GCC Petroleum Media Forum

# Managing the OPEC message

***OPEC's Secretary General, Mohammad Sanusi Barkindo (pictured left), and an accompanying delegation participated in the 3rd Gulf Cooperation Council Petroleum Media Forum held on April 19–20 in Abu Dhabi, United Arab Emirates (UAE). The international gathering was held under the auspices of His Highness, UAE President, Sheikh Khalifa Bin Zayed Al-Nahyan. The following is a summary of the event provided to the* OPEC Bulletin.**

Journalism and the impact of the media are as important today as ever, especially in an age of lightning-fast communication. This is part of the reason the Gulf Cooperation Council (GCC) organized the third Petroleum Media Forum, bringing together practitioners from the worlds of both petroleum and the media.

OPEC's Secretary General, Mohammad Sanusi Barkindo, delivered a keynote speech at this year's Forum, to the delight of attendees. In addition to speaking to the international media about OPEC's work, he reviewed the achievements of the production adjustment decisions taken in Vienna at the 171st Ordinary Meeting of the OPEC Conference on November 30, 2016, and at the OPEC/non-OPEC meeting held on December 10, 2016. The result of these meetings was the historic 'Declaration of Cooperation', which, at the 172nd Meeting of the OPEC Conference held on May 25, 2017, was extended to March 2018, thanks to collective voluntary decisions on the part of OPEC's 13 Member Countries and 11 participating non-OPEC producer nations.

"For the month of February, conformity to the adjustment stood at 94 per cent, which was eight percentage points above the January figure — already in itself impressive," the Secretary General said. He also said that conformity for the month of March was expected to be greater than February's figures.

The Secretary General also publicly thanked Suhail Mohamed Al Mazrouei, the UAE's Minister of Energy, "for his skillful, persuasive and constructive engagement during the intensive negotiations" which paved the way for last year's landmark decisions. "I am indeed very confident our collective action will continue to prove effective and bring us the results we are seeking."

The Secretary General's speech was followed by a video showcasing the first phase of the *'Oil and Gas Big Data Project'*, an initiative jointly developed by the OPEC Secretariat and the UAE Ministry of Energy.

According to the video, the project will have the capacity to display raw figures and compare time series between countries, as well as flows and products. It is aimed at developing a comprehensive, multi-dimensional and easy-to-use tool for analyzing publicly available oil and gas data. The results of the project's first phase are expected to be presented later this year, during the Abu Dhabi International Petroleum Exhibition and Conference on November 13–16, 2017.

During the first day of the Petroleum Media Forum, the Secretary General also took part in a session entitled *'Managing the OPEC message in the digital age of disruption'*. He was joined by John Defterios, CNN Money's Emerging Markets Editor.

In his comments, the Secretary General emphasized the need to establish and maintain positive working relations between OPEC and the media — in a manner that can be mutually beneficial.

He also asked members of the media, particularly those covering OPEC, to work harder to report "accurately, fairly and responsibly on the Organization and its Member Countries". He added that OPEC, in turn, would remain transparent in its day-to-day operations and in its policy initiatives — so that the media can continue to have access to OPEC information and decisions.

Demonstrating his readiness and willingness to engage with the media, the Secretary General gave interviews on the sidelines of the event to Bloomberg, Reuters, Sky News Arabia, CNBC International, Associated Press, Platts, Energy Intelligence, the Arabic-language London-based *Al-Hayat* newspaper and several other media outlets.

## Rebalancing of the oil market

He also briefed members of the press on recent developments in the oil market and discussed how recent production adjustment decisions have contributed to the rebalancing of the oil market to the benefit of consumers and producers.

The two-day event was attended by energy and oil ministers from Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE. Along with ministers, the Secretary General attended a Gala Dinner on the first day of the meeting, which was organized to honour some of the distinguished journalists and media personalities who have contributed to the excellence of GCC petroleum coverage.

*Mohammad Sanusi Barkindo (r), OPEC's Secretary General; with John Defterios (l), CNN Money's Emerging Markets Editor.*

# OPEC Secretary General addresses 3rd Iraq Energy Forum, meets with senior Iraqi officials


OPEC's Secretary General, Mohammad Sanusi Barkindo *(pictured right),* visited Iraq in early April to speak at a high-level plenary session at the 3rd Iraq Energy Forum and to participate in a series of meetings with top officials from the Iraqi government.

The Iraq Energy Forum, which took place at the Al-Rasheed Hotel in Baghdad from April 2–4, was held under the motto, 'Iraq: towards an effective energy sector and economic diversity.' It counted with the participation of various officials from the Iraqi government and international organizations, as well as foreign and domestic energy companies.

The Forum began with opening remarks delivered by Iraqi Prime Minister, Dr Haider Al-Abadi, who expressed his appreciation for the Forum and asked participants to share, in the course of the Forum, their ideas for facilitating and improving investment planning in the country. He also affirmed his commitment to building a robust economy and diversifying the country's revenue sources, so that it may eventually move away from sole reliance on oil revenues.

The Prime Minister's remarks were followed by remarks by Parliament Speaker, Dr Salim Al-Jubouri and the Forum's Guest of Honour, Mohammad Sanusi Barkindo, OPEC's Secretary General.

In his speech, the Secretary General thanked the government of Iraq for its hospitality and for hosting the Forum. He also praised the role of Iraqi Oil Minister, Jabbar Ali Hussein Al-Luiebi, and his work through OPEC to restore Iraq's leadership position within the Organization. He also reminded the audience of the historic role played by the country in the founding of OPEC. "I cannot pass up the opportunity to recognize Iraq's central role, almost 57 years ago, in the setting up of the then-fledgling group, the Organization of the Petroleum Exporting Countries."

He added: "Here in this city on the banks of the rivers Euphrates and Tigris in the land of Mesopotamia near the historic Babylon, the five Founding Fathers of OPEC — Venezuela's Juan Pablo Pérez Alfonzo of Venezuela, Abdullah al-Tariki of Saudi Arabia, Dr Tala'at al-Shaibani of Iraq, Dr Fuad Rouhani of Iran and Ahmed Sayed Omar of Kuwait — gathered together in the Al-Shaab Hall, to midwife this Organization on September 10–14, 1960."

In addition, the Secretary General provided a brief account of the landmark achievements of late 2016, as well as of the implementation of those decisions, highlighting Iraq's historic leadership, as well as its role in the consultation process of recent months. "As a Founding Member, Iraq has played a pivotal role in OPEC's evolution to what the Organization represents today. And it continues to show the leadership and commitment to the Organization that ensures OPEC remains engaged and relevant today."

He lauded Iraq's "significant progress in raising its production capacity, despite the many above-ground challenges it has faced, and extended his deep appreciation for the constructive, flexible, and accommodating role that Iraqi leadership has played in the challenging process of consultations and negotiations that eventually paved the way for the OPEC and non-OPEC decisions, and the 'Declaration of Cooperation'.

The Secretary General also noted the ongoing efforts of Member Countries to meet their obligations as secure and reliable suppliers of oil to world markets. "I have no doubt that OPEC Member Countries remain committed to investing in new capacity and necessary infrastructure, despite the downturn we have witnessed in the last couple of years. This is certainly true here in Iraq."

Additionally, he praised Iraq's "significant progress in raising its production capacity, despite the many above-ground challenges it has faced", including the enormous potential the country has for its future development. "Iraq," he said, "is also ideally positioned for the large oil demand growth expected from the Asia-region in the coming decades."

After his speech at the Forum, the Secretary General held a series

*Left: Dr Fuad Masum (r), President of Iraq, met with Mohammad Sanusi Barkindo (l), OPEC's Secretary General.*

*Dr Haider Al-Abadi (r), Iraqi Prime Minister; Mohammad Sanusi Barkindo (c), OPEC's Secretary General; and Jabbar Ali Hussein Al-Luiebi (l), Iraqi Minister of Oil.*

*Dr Haider Al-Abadi (r), Iraqi Prime Minister, and Mohammad Sanusi Barkindo, OPEC's Secretary General.*

*Mohammad Sanusi Barkindo, also met with Sayyid Ammar Al-Hakim (r), Head of the Iraqi National Alliance, the largest parliamentary bloc, and Head of the Islamic Supreme Council of Iraq.*

*Mohammad Sanusi Barkindo (r) receiving a gift from Dr Luay Al Khatteeb (l), the Executive Director of the Iraq Energy Institute and organizer of the 3rd Iraq Energy Forum.*

of individual high-level meetings with top Iraqi government officials. Under the auspices of Iraq's Minister of Oil, Jabbar Ali Hussein Al-Luiebi, OPEC's Secretary General and an accompanying delegation from the OPEC Secretariat first met with the President of Iraq, Dr Fuad Masum.

The Secretary General expressed gratitude to President Masum for Iraq's unwavering support during the recent period of extensive consultations between OPEC and non-OPEC nations that led to the historic decisions at the end of 2016 and the 'Declaration of Cooperation' with non-OPEC countries. "By your guidance, great encouragement and the support of your offices, we were able to reach these decisions that were beyond expectations," he told the President. The Secretary General also reiterated the important leadership role played by Iraq and once again praised the key role of the country's Oil Minister, who was instrumental in the process.

The Secretary General also met with Iraq's Prime Minister, Dr Haider Al-Abadi, later in the day. This represented the second such meeting in less than six months, he noted, and he thanked him once more for the continuing support to OPEC. The two officials discussed various topics, including the current market situation and ways to continuing to support efforts to rebalance the market within the framework of the recent landmark decisions reached between OPEC and participating non-OPEC countries.

The Prime Minister, in turn, expressed his appreciation of the impartial role pursued by the Secretary General and stressed that Iraq will continue to support the Organization's decisions and their implementation, despite whatever challenges the country may have.

Finally, the Secretary General met with the Head of the Iraqi National Alliance, the largest parliamentary bloc, and Head of the Islamic Supreme Council of Iraq, Sayyid Ammar Al-Hakim, who underscored Iraq's commitment to the decisions taken by OPEC and participating non-OPEC countries last year.

Before departing, the Secretary General thanked Muatasim Akram, Iraq's Deputy Oil Minister and Dr Falah Alamri, the Governor of Iraq, and other Iraqi officials for their warm welcome and generous hospitality — and said he looked forward to his next visit.

# Iran Oil Show 2017 attracts record numbers of exhibitors


***Already an institution in its own right, the IR Iran International Oil, Gas, Refining and Petrochemical Exhibition (Iran Oil Show 2017) broke new records this year for the number of exhibitors trying to participate. Organizers had to turn away 800 national and international applicants, stated show director* Mohammad Naseri. *"We have a lot of fans."***

*By Maureen MacNeill, reporting from Tehran*

The already frantic traffic in IR Iran's capital of Tehran thickened to a near halt and the Tehran permanent fairground became a veritable beehive of activity for the four days of the biggest energy exhibition in the Middle East in terms of the number of participants and size, which started on May 6.


Naseri said that the Iran Oil Show started as a fledgling event 22 years ago with less than 200 companies and only two halls. This year 4,000 local and international exhibitors were spread out over 25 main halls. The 2,500 Iranian and 1,500 foreign firms from 37 countries present added to the air of buzz and excitement which could be felt throughout the city. Exhibitors hailed from far-flung countries such as Australia, Austria, Canada, China, France, Germany, Italy, Japan, Russia, South Korea, Spain, Turkey and the US. The exhibition site stretched over 80,000 square metres of land, 55,000 sq m of which was occupied by stalls.

The date of the event is specified by the International Federation for Exhibitions and Events Services, thus it has found its own footing over time among international exhibitions. "This exhibition is big because it covers all four big sectors of the oil industry: gas, oil, petrochemicals and refining," said Naseri.

Additionally, 15 specialized forums were held on the sidelines of the exhibition this year, where experts from


different areas of the industry exchanged views and discussed issues with foreign and local businesses.

"The exhibition is aimed at cementing new contractual frameworks in the industry … projects that should be developed by domestic and international partners in a parallel mode," said Naseri. "We hope these partners find each other, interact and see each other. The main goal is the transfer of technology and investment."

This year is special because it is the second exhibition held after the implementation of the Joint Comprehensive Plan of Action (JCPOA), an international agreement regarding the nuclear programme of IR Iran, reached in Vienna on July 14, 2015, between IR Iran, the P5+1 (the five permanent members of the United Nations Security Council — China, France, Russia, United Kingdom, United States — plus Germany) and the European Union, stated Kasra Nouri, General Director of Public Relations at the country's Ministry of Petroleum. The JCPOA entered into force in January 2016.

He added companies are still careful in their actions and wary of conditions.

Still, there have so far been 27 Memorandums of Understanding (MOUs) sealed over the past months since the JCPOA has been implemented, including several signed during the exhibition, stated Nouri.

These primarily focus on oil field development, with some gas targets as well, he said. Both greenfields and brownfields, as well as newly discovered fields are included, as well as enhanced oil recovery (EOR) and improved oil recovery (IOR).

"There is great potential (in EOR and IOR technologies) and many companies active in the field are interested in coming over and joining us."

One of the MOUs announced during the Iran Oil Show 2017 was with the Philippine energy company PNOC Exploration Corporation. Company President and Executive Officer, Pedro A Aquino Jr, said at the signing ceremony, "We are honoured today with this exciting ceremony we are going to have with NIOC (National Iranian Oil Company). This marks a significant milestone in history of our company. We came to IR Iran a year ago, thanks to business opportunities which your beautiful country can offer us.

"We had the opportunity to discuss with officials … and we sharpened our interest in really pursuing these projects in IR Iran. We are glad that NIOC gave us this opportunity to sign this MOU, which we feel will start the relationship between our two nations."

He stated later the MOU provides the opportunity to develop oil and gas fields and establishes a first in the area of LNG as well, adding the country is hoping to become a main partner.

"All the companies attending the exhibition, both local and foreign, have felt the difference in this exhibition," said Nouri. "They see it as a much more efficient and practical exhibition than in previous years.

"So far 30 exploration and production [E&P] companies have indicated their readiness for involvement in IR Iran, he continued. Investment in the downstream is much easier and on a smaller scale, which is why the main focus is put on the upstream," stated Nouri.

"Our main message would be that IR Iran has undergone serious changes in its business environment," said Naseri. "We want to show that IR Iran is a safe and favourable place for the serious and effective presence of international companies for investment. We believe that IR Iran is a sustainable and reliable source of energy supply to the world."

He added a big barrier continues to be misbeliefs about IR Iran. "We are determined and serious in this path and will do whatever it takes to reach success."

Additionally, exhibition organizers have been interacting with and visiting other international exhibitions in a mutually cooperative effort to continuously improve the event.

## Opening ceremony

At the opening of the event, Iranian Parliamentary Speaker, Ali Larijani, said the Ministry of Petroleum is seeking new investments in the oil industry in a push to enhance the recovery of oil from reserves.

Larijani underscored the importance of the oil sector to the country's economy and added that any industry development has a knock-on effect on other industries in the country. He emphasized the importance of efficient use of energy and added, "Parliament passed legislation about Clean Air a few days ago." He said that the administration has kept a strong focus on developing

joint oilfields, which is a national interest of IR Iran, and added that the petrochemical sector also has great potential which still needs to be tapped.

Minister of Petroleum, Bijan Namdar Zanganeh, stated at the opening ceremonies that IR Iran's return to the oil market was an immediate outcome of the entry into force of the JCPOA (in January 2016).

"IR Iran's oil production and exports increased by more than 1 million barrels/day and we have managed to regain a share that had been lost and feared never to return."

The development of joint oil fields with neighbouring countries has also accelerated under President Hassan Rouhani's administration. For example, production from the West Karoun fields in western IR Iran soared from 70,000 b/d in 2013 to 280,000 b/d in March. The oil layer of the South Pars gas field started producing 25,000 b/d of oil, while the jointly owned Azar oil field was supplying 15,000 b/d. The country's petrochemical output increased by more than 5 million tonnes and will hit 9m t with new projects planned to come online before August, stated Zanganeh. A total of 10.5m t of output will have been added from the country's petrochemical sector at the end of a four-year period.

Additionally, 11 development phases of the South Pars gas field, which the country shares with Qatar, came on-stream in the past three-and-a-half years. Output has doubled in recent years, with production from the huge reservoir jumping from 285m cubic metres/day in 2012 to 575m cu m/d in March, resulting in an increase in gas supply to power plants from 36 billion cu m in 2013 to 62bn cu m in 2016.

IR Iran also moved from being a gasoil importer to being a gasoil exporter, and the country was able to export 50m litres of fuel oil in 2016.

"I announce firmly that IR Iran's petroleum industry is ready for a jump ahead. As we can see today, domestic manufacturers and contractors enjoy high potential with regard to the petroleum industry," he said.

## German presence

Matthias Rüdiger's German company Samson has attended the exhibition for maybe ten years, though sometimes under another name. "There is a history," he said.

As is the case with other countries, the German government provides some support for a pavilion featuring German companies in attendance. "The Germans have had good relations with the Iranians for a very long time," said Rüdiger, adding, they like the "made in Germany" symbol. German and China are probably the top represented countries at the event, he added.

*Ali Larijani, Iranian Parliamentary Speaker.*

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

The valve manufacturer has been doing business with IR Iran for more than 30 years and has never left the market. "We never disappeared, even in very hard times, like in 2011, 2012, 2013. For sure we always respect the rules, and had to follow the regulations, but we never left and whatever business was legal, we tried to do it."

Rüdiger said he has personally been travelling to IR Iran with the company for nearly ten years and has seen a lot of different developments. A few years ago, in 2012

*Kasra Nouri, General Director of Public Relations at IR Iran's Ministry of Petroleum.*


*Above: Supported by the government, the German pavilion features many German companies. Pictured at the top is Matthias Rüdiger from Samson, Germany, who has attended the Iran Oil Show for nearly ten years.*

France. "The Chinese for sure as well, they were here before."

He said it is his feeling and the feeling of his management, as well as the Iranians, that all the good news about removal of sanctions made everyone think they could easily conduct business, but it's not so easy.

However, in the last six to nine months it has been getting better, he added. "We won some projects. Finance … is still a headache. We find solutions but it's very hard."

As a private, German company, it is more flexible in finding solutions on all fronts, he stated. Not being financed by third parties is a benefit and the company has more freedom regarding financing options.

Samson has established a subsidiary in IR Iran, which was officially registered two weeks earlier. "We would have done it earlier, but with sanctions it was not possible … Now we can start to act. Find an office, hire people. I guess in the next three to six months it will be under operation," said Rüdiger.

The company's general philosophy, which it applies to all 50 of its subsidiaries, is to bring service near the customer. The Iranian national oil company is also looking for suppliers which produce in IR Iran, he said. "It is our own philosophy to come here, but they want it too

when he was there, "I had the feeling I was the one and only European guy. It was good at breakfast, everything was empty," he laughed.

Also four or five years ago, the company used to get a lot more hate mail back home for doing business with IR Iran, which has lessened in recent times.

Over the past year, the event has become very crowded with foreigners from Germany, Italy, Spain and

*Mohammad Naseri, Director of the Iran Oil Show 2017.*


*Above: IR Iran is China's second-biggest trading partner. Pictured at the top is Yang Wang, Project Manager at Hangzhou Steam Turbine Co Ltd, one of China's companies present at the show.*

... we want quickly to have production, local assembly, and so on."

Iranians are very interested in the acquisition of know-how, he added. "But we are proud to bring our know-how here and it is also an advantage when we are really here ... But we can learn from them because they are the end-user and they know the application."

He said that the knowledge level has definitely increased in the country over the years. "They are clever people and also they are people who want to manage by themselves ... independent ... When they don't get products they have to do something. For example, a German company making cables faces a problem now because there is a lot of local manufacturing of cables in IR Iran.

"Whenever there is a project in the oil industry and there is a local manufacturer, he has a first ... We still have an advantage from the technology and quality perspectives, but maybe in five years it's different."

## China's position

Yang Wang, the young Project Manager at the Hangzhou Steam Turbine Co Ltd booth, said his company makes steam turbines and has been attending the exhibition since 2003.

The company has about 30 projects in IR Iran to date, but Wang said business was better for Chinese companies before last year. Since then, many German and Japanese companies have come and they are increasing competition.

"The Chinese government has issued directives to Chinese companies to go overseas to do business," he added. IR Iran is China's second-biggest trading partner after India.

He stated that most Chinese businesses are simple

manufacturing firms, producing packaging or flanges, "but we have a steam turbine and that is our advantage. It's very complicated and that's why we can get almost 30 projects here. We try high-quality manufacturing."

He said his company does a lot of work in the petrochemical business, which is currently developing very fast in IR Iran, and is in need of equipment. "So it meets our requirements."

A lot of Chinese companies have a presence in the country and Wang thinks that China and IR Iran have a very good relationship which will continue. "There is a long history of joint cooperation. We will keep the cooperation, and will keep in touch."

*Hamid Reza Araghi, Deputy Oil Minister and Managing Director of the National Iranian Gas Company (NIGC).*

## Austrian pavilion

Project Manager of the Austrian pavilion, Markus Gumplmayr, explained that the Austrian pavilion made a return appearance last year after disappearing during the time of sanctions.

"The last time we were here was 2009 (before sanctions were removed). We are proud to have more companies than last year. Last year we had 10 and this year 14 … The feedback from Austrian companies is very positive; all of them are thinking of joining again next time."

Gumplmayr said that before 2009, the Austrians came many times, thus there is a strong relationship between Austria and IR Iran, and people in IR Iran appreciate the high-quality products produced in Austria.

"There has been very good news during the exhibition," he added, clarifying that two Austrian companies have signed MOUs for some millions of euros.

"As you know Austria is very small, so it's more important to produce high-quality products, because it's necessary if we would like to survive."

The Austrian businesses present offer products such as oil and gas equipment, spare parts, control systems compressors, software, industrial organization, scientific and analytical instruments and engineering.

The financial situation is not satisfying for Austrian companies, he said, but the market is very important.

"I think that is one of Austria's main strengths. When the market is not high we try to stay in contact with companies and people here because that's what a long-term relationship is about … staying also when times are poor," said Gumplmayr.

Success depends on including local technology and strong local relationships, thus IR Iran's strict policies about local involvement are not a problem.

Gumplmayr stated that the quality of education in IR Iran is very high, which can also be observed from the amount of Iranian doctors in Austrian hospitals. "They know it is important to be well educated and the population is very young … They are very open-minded and hope the situation will improve here."

*Ali Kardor (r), Deputy Minister of Petroleum and Managing Director of the National Iranian Oil Company (NIOC), with the* OPEC Bulletin's *Maureen MacNeill.*

## OPEC in Iran Oil Show

The Organization of the Petroleum Exporting Countries (OPEC) took part for the fifth time in the Iran Oil Show. During the exhibition, the OPEC booth was visited by many people. While introducing some OPEC activities in the field of oil international policies, the OPEC Public Relations staff directly interacted with interested visitors, providing them with relevant information. Accordingly, visitors were attracted by the OPEC booth, which was designed based on Iranian-Islamic architectural elements, as well as elements highlighting the Organization's mission, and the unique status and role of OPEC in oil market stability and world oil balance and security.

The OPEC booth, which was placed in the National Iranian Oil Company (NIOC) VIP hall and decorated by flags from Member Countries and OPEC, was a centre of attention for many Iranian and foreign visitors at the Iran Oil Show. Due to the large number of visitors coming to the OPEC booth, experts from the General Directorate of OPEC and International Energy Fora of Iran's Petroleum Ministry, Ehsan Jenabi and Mohammad Khoddam, were present at the booth to answer visitors' questions and provide them with required information.

*A view of the OPEC stand at the Iran Oil Show 2017.*

During the exhibition, the OPEC booth was visited by some senior officials from IR Iran's Ministry of Petroleum, including the Deputy Minister of Petroleum and Managing Director of the NIOC, Ali Kardor, and IR Iran's National Representative to OPEC, Behrooz Baikalizadeh. Moreover, a number of Members of Parliament and other government officials, as well as university officials visited the OPEC booth and spent time discussing global oil issues and the role of OPEC in oil market developments. In addition, the booth was welcomed by professionals, academics and students. While appreciating the presence of the OPEC Secretariat at the fair, many visitors raised questions about OPEC issues, especially its recent decisions and their impact on the oil market.

It is worth noting that during the 22nd Tehran Oil Exhibition, in addition to oral information provided to visitors, Secretariat publications and reports were

*A model of an offshore platform with a helipad on display at the show.*


*A group of Iranian students paid a visit to the OPEC stand. They were welcomed by Ehsan Jenabi (r) and Mohammad Khoddam (l) from the the General Directorate of OPEC and International Energy Fora of Iran's Petroleum Ministry.*

distributed and were highly welcomed by both professionals and academics familiar with their valuable content. These included OPEC's *Monthly Oil Market Report,* the *OPEC Bulletin*, the *World Oil Outlook 2016* and the *Annual Statistical Bulletin*.

The participation of OPEC in such events, especially in OPEC Member Countries, aids OPEC in becoming more known to the global community and further highlights the pivotal role of OPEC in the oil market.

*One of the MOUs that was announced during a press conference at the Show was with the Philippine energy company PNOC Exploration Corporation.*


# Association supports oil and gas businesses in IR Iran

The Association of Petroleum Industry Engineering and Construction Companies (APEC) was formed in 2000 with a membership of only 40 private Iranian firms — but has since grown to 240 members today.

In an interview with the *OPEC Bulletin* on the sidelines of the 2017 Iran Oil Show, APEC Board Member, Gholamhossein Moeindarbari *(pictures above right),* explained that APEC was formed in order to support companies and facilitate arrangements between companies, as well as to bring various companies in different fields of activities to work on suitable projects.

According to Iranian law, companies are graded from one to five based on the level of their technology, size, machinery, infrastructure, and a number of other factors. Companies need to achieve a certain grade to be accepted as members of APEC — though different areas of a large company can be graded differently.

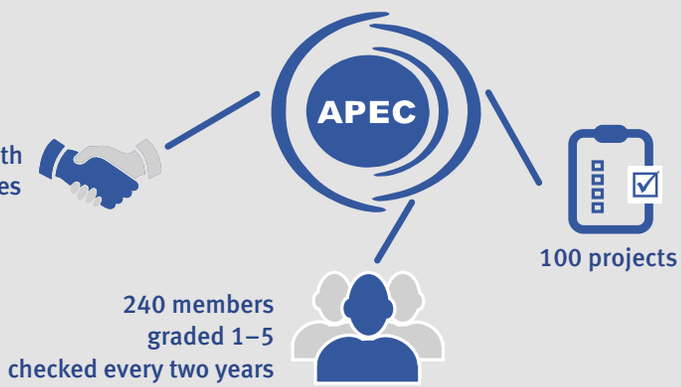
Moeindarbari said that companies are able to move from a lower grade to a higher grade, according to how much the level of their technology and investment is enhanced. They are checked every two years by the government. Those companies who achieve membership get special credits for projects, he added. "They get advantages, more offers."

Having connections to foreign companies is essential. "Knowledge and technology are not limited within the country," Moeindarbari said. "So we have to have connections … with other suppliers [and] joint ventures, as well as cooperation among our companies," he said. "Just now we have, for example, an agreement with Spanish and Italian associations. Different associations can transfer knowledge and there are similar associations in many countries."

"The [foreign and local] associations find companies that match. It's also about training, workshops and maybe some cooperation," he added.

"One hundred projects in IR Iran have been carried out by companies that are members of APEC," said Moeindarbari. He added that all potential sectors of the Iranian oil and gas industry are represented by these companies, with approximately 60–70 per cent by Iranian firms and 30–40 per cent by foreign companies.

Iranian companies use basic engineering, technology, know-how and equipment from high-level foreign companies that have a good relationship with IR Iran. But foreign companies may also have joint ventures with Iranian companies and/or their own office in IR Iran.




"The important thing is finance," he emphasized. "The Iranian government invites companies to come to IR Iran with finance." He then added that the country needs a lot of investment, particularly in the upstream but also in the midstream and downstream.

There are, however, certain rules about how much project financing from foreign as opposed to local or domestic firms is allowed. But, to this end, he says "[It] the government has provided some facility for the changing of money." This can expedite the system for people who want to invest in IR Iran. "There are less financial barriers."

Thus, today, any company that wants to participate in a project in IR Iran must establish a joint venture with an Iranian company that belongs to APEC. The newly adopted contracting system is also favourable for APEC, he said. "Our association participated with the government to issue this contract."

As for the future, Moeindarbari said he hopes to see APEC continue to expand and develop, both to the benefit of Iranian companies, and, in the end, to the country's economy as a whole.

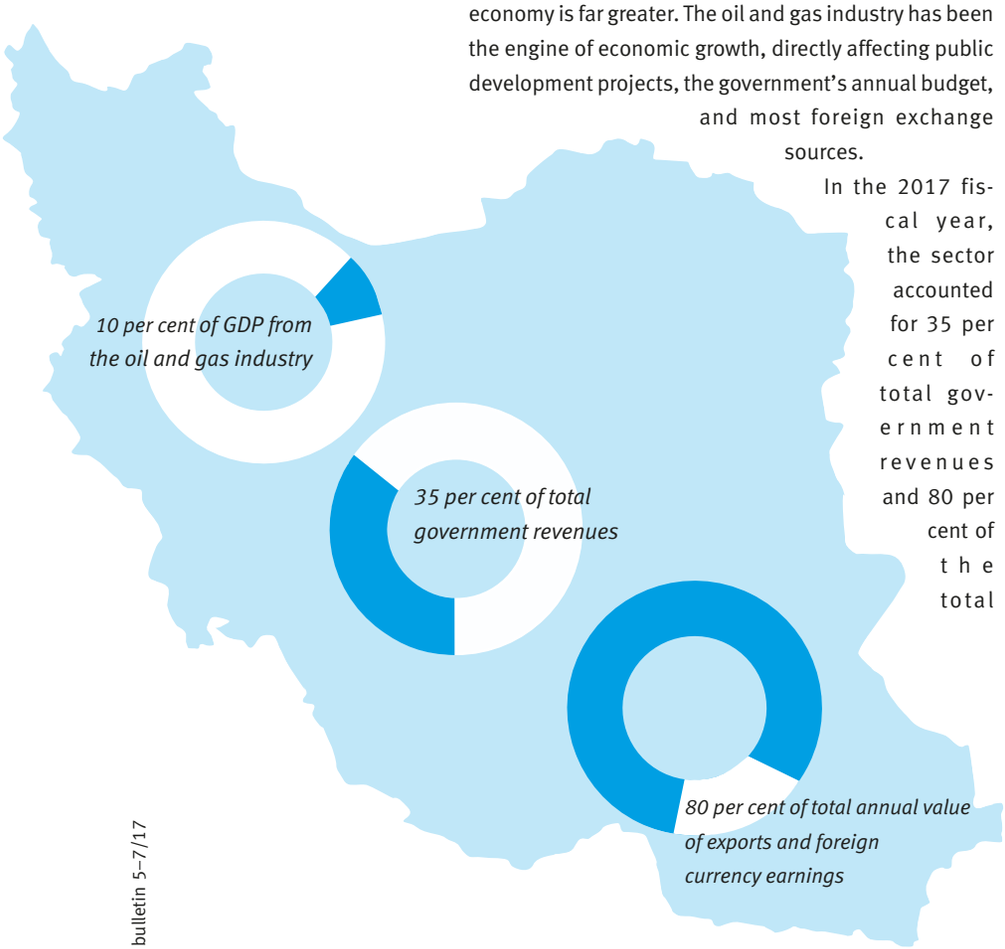
# Iran's oil, gas, refining and petrochemical industry on the upswing

*From various government ministry posts held over an impressive span of 32 years, Minister of Petroleum for IR Iran, **Bijan Namdar Zanganeh**, has witnessed first-hand the difficult times that have been endured by the country's hydrocarbons industry, which is a vital component of the country's economy.*

By Maureen MacNeill

The energy superpower receives about ten per cent of its gross domestic product (GDP) from the industry, but the importance of the hydrocarbons sector to IR Iran's economy is far greater. The oil and gas industry has been the engine of economic growth, directly affecting public development projects, the government's annual budget, and most foreign exchange sources.

In the 2017 fiscal year, the sector accounted for 35 per cent of total government revenues and 80 per cent of the total annual value of both exports and foreign currency earnings.




During his opening remarks at the Iran Oil Show 2017, Zanganeh reminisced about past difficult times, but stated that over the last three years good success has been achieved. This is apparent in the doubling of output from the South Pars field in this period, the amount of Iranian villages which now are now supplied by gas, developments in the petrochemical industry and other markers. Still, he recognized there remains quite some way to go before the country can reach its full potential.

Zanganeh believes that petrochemical output needs to increase, domestic refining capacity should rise and there should be more foreign and domestic investment, particularly in the upstream. But in general, he is of the view that the report card is positive and there is an overall hopeful feeling for the future of the country.

This was reflected in statements from Iranian President, Hassan Rouhani, some weeks before the exhibition at an inauguration for petrochemical projects. "For the first time in IR Iran's history, non-oil exports outdid imports in (March 2016 to March 2017)," he said.

Ali Kardor, Managing Director of the National Iranian Oil Company (NIOC), stated in an OPEC interview at the Iran Oil Show 2017 that the country's oil production capacity will quickly reach up to 4 million barrels/day (m b/d), though its production would remain lower. "We adopted the production rules and regulations of the ministries, the Minister of Petroleum. NIOC can only

provide the capacity for the production and the government orders how much we can produce."

He stated that there have been new upstream agreements concluded for some fields, especially common fields along the border of Iraq. "By 2018, the latest and last phases of South Pars should be finished. Some may remain for 2019.

"For the next Iranian year (which began on March 22), the country is focusing on completing new upstream contracts for big fields such as South Pars, Western Karoun (including Yadavaran, Yaran, Azadegan and Changuleh) as well as medium-sized fields Jofayr, Sohrab and Aban," said Kardor.

He discussed the importance of enhanced oil recovery (EOR) and improved oil recovery (IOR), stating that although the country is very capable regarding normal production, and has very good performance and technology in the areas of drilling, transfer and production units, "for injection and hydro fracturing or acid fracturing or use of some polymer, water injection or gas injection we need more input, particularly for some fields where recovery is low, below ten per cent. We hope to increase to 20 per cent.

"For this reason we are inviting some international oil companies (IOCs) which have some technology to come to IR Iran for EOR/IOR."

During a press conference at the Iran Oil Show 2017, Kardor discussed the second development phase of the massive South Pars gas field, which will primarily focus on planning and technology transfer to maintain production levels of the field through enhanced recovery methods.

He stated that all phases of the development projects of the gas field, which is shared with Qatar (except for South Pars 11), will be complete within a year.

"Fortunately, IR Iran's gas output from the field has reached that of Qatar," said Kardor.

He added that seven proposals have so far been submitted by international companies to NIOC for the development of oil projects in the country, including from Pertamina, Lukoil, CNPC, Total and Inpex.

IR Iran plans to strike $80 billion worth of oil contracts over the coming two years as the country looks to implement its newly developed contracts, stated Gholam-Reza Manouchehri at the exhibition. The Deputy Head of NIOC added that plans are under way to "stabilize and boost IR Iran's standing within OPEC and the world.

"Every one per cent increase in the recovery rate would mean an increase of 7.5 billion barrels of oil to the existing known reserves," he added. "IR Iran will continue to rank first to third among main energy players in the world. We have to reach a point where we would be the owners of oil and gas technologies and we should not be content with being only a vendor."

Managing Director of the National Iranian Drilling Company (NIDC), Mohammad Reza Takayei, stated at the exhibition that the company has successfully spudded 725 oil and gas wells since 2013.

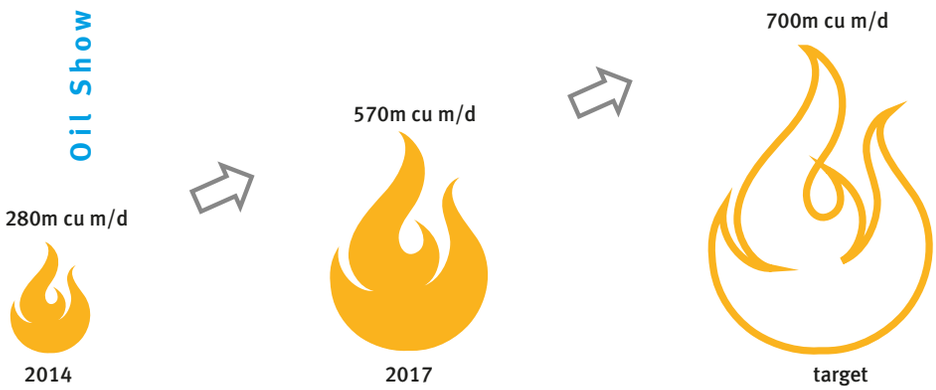
*Mohammad Meshkinfam, Managing Director and Chairman of the Board of Pars Oil and Gas Company, a subsidiary of NIOC.*

## Gas development

Mohammad Meshkinfam, Managing Director and Chairman of the Board of Pars Oil and Gas Company, a subsidiary of NIOC, is in charge of the development of South Pars oil and gas fields.

Meshkinfam made some public announcements regarding development and completion of the South Pars project during the exhibition.

"We referred to some investment regarding our project. Our CAPEX is about $90bn and we spent about $70bn, so the remaining balance is about $20bn. We will arrange for the remaining balance of this $20bn over the next two years."




For this, he thinks $10bn will be used, which will leave only phase 11 uncompleted, though its development is already under discussion with France's Total.

Local contractors were primarily used for all of this development due to sanctions, stated Meshkinfam. Although some equipment and materials were procured from foreign companies, the management, construction and engineering were undertaken by local contractors, he said.

"Mostly basic and conceptual designs come from the outside, but we perform this job once and apply it to the other projects. After one time we absorb this technology from outside and then it is done by local consultants. We perform the job by ourselves."

He stated that 80–90 per cent of the gas produced by the country comes from the South Pars area. There is also a very small independent layer of oil on top of the reservoir and "fortunately we have production of about 20,000 b/d. We hope we can develop this field and expect about 140,000 b/d.

"The gas itself is a mixture of gas and condensate," he says, "and the condensate is produced along with the gas. For this reason the gas is rich gas."

## South Pars history

The South Pars gas field has been a great success story for IR Iran. "First developed about 15 years ago, the country started to develop phases two to five with international companies and learned how to manage the project, how to run the engineering, procurement and construction (EPC) contracts for the mega-projects, and fortunately this technology is now localized and we can perform the job here in IR Iran," stated Meshkinfam.

"We hope that this trend will remain as it is and that these companies will grow and perform even better in the future."

The most intensive development has taken place over the past four years, during which 11 phases and five projects were developed and concluded, all of which are in operation right now. "We increased production from 280 million standard cu m/d (m cu m/d) to about 570m cu m/d. It has doubled in four years."

In the next four years, the target is to reach about 700m cu m/d, according to Meshkinfam.

The operation processes of development phases for South Pars gas field started with the inauguration of Phase 12 under the administration of President Rouhani. This continued as phases 15 and 16 came online. The developments were completed as phases 17 and 18, 19 and 20 and 21 came on-stream.

The development of South Pars is considered to be of high importance to the country, as the gas recovered from each phase would add one per cent to IR Iran's GDP, Kardor said in a recent Iran Petroleum interview.

"South Pars supplies gas in the country and provides welfare for people in the winter. Furthermore, enhanced production from this field will help natural gas replace petroleum products, which will in turn lead to more export of oil products and directly impact job creation, economy, etc."

He added that phases had to be prioritized under President Rouhani's administration because of the sanctions that were in place, leading to a sharp decline in NIOC's financial resources.

Due to the financial difficulties, the Ministry of Petroleum and NIOC guaranteed that contractors operating joint oil and gas fields, including South Pars, could benefit from the National Development Fund of Iran (NDFI). Thus, progress in South Pars was able to pick up speed.

The implementation of the Joint Comprehensive Plan of Action (JCPOA), IR Iran's nuclear deal with six world powers, facilitated financial transactions and the possibility of opening credit, which significantly helped in completing the development of the South Pars phases, according to Kardor. The lifting of the ban on buying compressors, valves and other equipment used in projects, which had been stuck abroad, accelerated project implementation.

"Development of jointly owned fields remains a priority for NIOC and that is why all activities in South Pars are concentrated on maximum recovery from this field," said Kardor.

Also in the *Iran Petroleum* publication, Mohammad Reza Chelipa, project manager of Phases 17 and 18 development stated that: "Today Iranian contractors have

become so powerful in South Pars that the Ministry of Petroleum has endorsed their qualifications for activity in the exploration and production (E&P) sector and they can easily operate offshore and treatment facility construction projects … ”

## Gas to replace fuels

Currently, 70 per cent of the energy used in IR Iran comes from gas, said Hamid Reza Araghi, Deputy Oil Minister and Managing Director of the National Iranian Gas Company (NIGC).

**70% of energy used in IR Iran is gas**

**six computer service stations have been built**

“It’s used for everything, for heating, for refineries, for industrial production. Last year, we had the best year in the 15 years (since NIGC was established). We could build six computer service stations, more than 800 km of pipeline and more than 3,000 villages were supplied with gas, only last year.”

**›800 km of pipeline built**

**›3,000 villages supplied with gas in 2016**

“There are 1,000 towns and 23,000 villages currently supplied with natural gas,” he stated. “It was the best year for NIGC for activity, for performance, without any problem.”

There is also a total of 230,000 km of pipelines, including gathering lines and small lines. The power plants in IR Iran use gas, especially in summer. “For pollution it’s very good.”

Additionally, a lot of refineries run on the gas produced by South Pars.

In the future, the country hopes first to export more gas to its neighbours, said Araghi, and then to establish LNG and negotiate with neighbouring countries to send these products by pipeline, including eventually to Europe. Currently, the country exports gas to Turkey, Iraq, Azerbeijan and Armenia by pipeline and it is in negotiations with Oman, Kuwait and Afghanistan.


*A replica of an oil installation at South Pars which was on display at the Iran Oil Show 2017.*

## Refining

The National Iranian Oil Refining and Distribution Company (NIORDC), also under the Ministry of Petroleum, and headed by Managing Director Abbas Kazemi, is responsible for ten refineries in IR Iran, nine of which are oil refineries and one of which is a condensate refinery.

The oldest refinery in the country — Abadan Refinery in the south of IR Iran — is about 110 years old. “It is still functioning very well, with a capacity of about 450,000 b/d,” said Kazemi.

“Refineries are in the process of being privatized,” said Kazemi, “and two refineries in the private realm have completed their basic design, but construction has not yet started.

“Generally NIORDC works with local companies in IR Iran,” he added, “though it plans to start some cooperation with companies abroad.

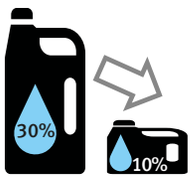
“We encourage them to come here and invest and build.”

Contracts have been made for consultation and the intermediate study of some refineries to plan their

*Abbas Kazemi, Deputy Minister of Petroleum and Managing Director of the National Iranian Oil Refining and Distribution Company (NIORDC).*

upgrading/expansion, he added. For example, both the Bandar Abbas and Tehran refineries will be upgraded with the cooperation of Japanese companies, while Tabriz Refinery upgrades are being discussed with another company, and Isfahan Refinery is currently being upgraded.

Kardor said at the event in Tehran that phases II and III of Bandar Abbas Gas Condensate Refinery will most probably come online by next year. "Once Siraf Condensate Refinery Project comes online, IR Iran will have no gas condensate left for export."



decrease fuel oil

"We want to decrease fuel oil from 30 per cent to below ten per cent by 2025," he said, when asked which products will be produced. The focus will fall mainly on gasoline and gasoil, said Kazemi.

And more than 40 per cent of the gasoline currently produced and 35 per cent of the gasoil is of Euro 4 standard. This will be increased in the very near future, so that 70 per cent of gasoil and gas production inside IR Iran will meet the Euro 4 specification, with the eventual goal to export to Europe, he added.

Since last year, the country has been exporting gasoil and fuel oil, as well as LPG and it will continue, he added. The natural gas network in IR Iran is extensive, and more fuel is becoming available for export.

As for the more distant future, the plan is to increase the total capacity of refineries to 3m b/d by 2021.

## Petrochemicals

The up-and-coming petrochemical industry in IR Iran is full of potential, according to the Managing Director of the National Iranian Petrochemical Company (NIPC), Marziyeh Shahedaie. She told the official Petroleum Ministry news service *Shana* that the Iran Oil Show 2017 was instrumental in the realization of the second giant leap of the country's petrochemical industry. She stated that NPC had initiated serious talks with leading chemical and international companies during the event, primarily aimed at technology transfer and the financing of petrochemical projects in IR Iran.

Shahedaie, also Deputy Petroleum Minister for Petrochemical Affairs, stated that NPC held talks with Spanish energy and petrochemical companies to finance projects in IR Iran.

Ali-Mohammad Bosaqzadeh, director of production control at NPC, told *Shana* that IR Iran produced more than 50 million tonne (m t) of petrochemicals in the last calendar year to March 2017.

"We expect to see a 7m t increase in petrochemicals this year," he added. "Based on our projections, 50 to 60 per cent of this year's output hike would come from operating units which would have capacity for more production and 30 to 40 per cent would be provided by new projects."

Bosaqzadeh said that IR Iran plans to make seven petrochemical projects operational up to March of next year. Shahedaie added the year after that there should be ten more projects, and that petrochemical production capacity should increase by about 20m t by March 2019.

Shahedaie is quoted in *Iran Petroleum's* April issue stating that four memorandum of understandings (MOUs) were signed with top petrochemical companies after the JPCOA with the P5+1 was agreed upon in January 2016.

"Currently these companies are conducting economic and technical feasibility studies on the projects. They will be concluded this year and agreements will be signed," she said.

Shahedaie said that 13 petrochemical projects came online over the past four years, adding 5.2m t of output capacity.

Some weeks before the Iran Oil Show 2017, President Rouhani inaugurated four petrochemical projects that will add some 2m t to the country's petrochemical production capacity, according to Iran Petroleum (April).

The President stated that international sanctions had blocked petrochemical exports. "We had the problem of supplying feedstock and exporting projects. Therefore the lifting of sanctions on the petrochemical industry was one of the primary agreements reached in Geneva (in the Joint Plan of Action signed between IR Iran and the P5+1 countries) … we have to get ready for a big jump after the removal of obstacles."

## Research and technology


fields have been dedicated to Iranian universities

The country decided to change its approach to research and technology after 100 years of producing oil from different fields, according to Head of the NIOC Research and Technology Directorate, Ebrahim Taleghani, in an interview with the *OPEC Bulletin*.

"Various huge fields have now been dedicated to different Iranian universities and institutes to research various field issues," he said. Prior to this, consultants were hired to address technology and research issues.

Currently nine fields are part of the programme, and eventually 12 or more will take part.

"Lots of projects were done in the past by professors, labs, doctorate and masters students, but they didn't have a place to concentrate activities. Now we have given one field to each and they can focus on that," said Taleghani.

For example, one gas condensate field may have more of an acid problem and another dense rock. "Each field has its own particular issues and now these can be intensely investigated," he said, "thus after some years universities may become specialized in some subjects.

"The starting length of the contracts is ten years," he said. "They are long-term contracts, they can be sure they will be continued."

The universities also have some obligations. They are asked to try and develop technical, research and laboratory networks with Iranian and foreign companies, universities and consultants, and to learn about best practices.

"There are now more European collaborators than before," he said, adding that he hopes that the US and Canada will also join in projects. As IR Iran has exported knowledge to so many of these countries in the form of experts abroad, "we already have ambassadors there. There are many Iranian professors in those countries, and this will also help cooperation."

He provided an example, such as "in a heavy oil or gas condensate field, solutions to problems can be found via the best practices of others. One of the obligations is that at least one foreign university join in the cooperative venture."

"The universities are technical consultants for that field and they are supported totally by NIOC," said Taleghani, adding that the universities are also involved in field development negotiations. "We have committees for negotiations. The university has a seat."

He has not heard of such a one-field-one-university programme in any other country, and believes that the Iranian Ministry of Petroleum and the NIOC is a leader in this.

All industry aspects are included, he said, such as computer issues, mathematics and engineering. All faculties are involved in finding a way to solve issues. These, in turn, provide reports to NIOC.

*Ebrahim Taleghani, Head of the NIOC Research and Technology Directorate.*

The other area the directorate is working on is technical knowledge and product development. "Not just buying and assembling, they are given a roadmap to improve."

Companies are rated by technical readiness level (for example, manufacturing readiness level [MRL], commercial and technical readiness levels [CRL, TRL]. "If a company doesn't understand subjects or concepts, it can't be in the market," said Taleghani.

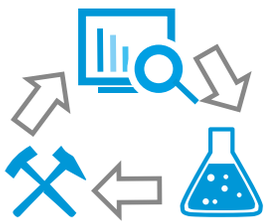
Through this system, the directorate is hoping to encourage companies to improve their capabilities and produce commodities/tools. This involves a great deal of flexibility, added Taleghani, because, for example, different oil compositions require different tools.

He added the clock did not stop when sanctions were imposed. "We had to stand on our own feet."

A big topic of research is EOR/IOR, he said. "It's very important to get more and more from a field. One field changes during its lifetime. It needs to be checked, monitored, proper software is needed to model and understand it. We need to understand what's happening a few kilometres beneath our feet … there is a big need for that."

He said it is important to monitor both greenfields and brownfields. "You always have to pay attention, from the beginning."

He continued by saying that the percentage extracted does not necessarily depend on the age of a field, but rather on characteristics. From the first day it may produce ten per cent or 40 per cent. "Geology is most important," he said.



**technical, research and laboratory network**

During times of strife (the IR Iran-Iraq conflict of 1980–88), then sanctions, he said, "we understood we have to emphasize our own capabilities and facilities."

The effect of sanctions, price, geopolitical tensions and war has increased the expertise of private Iranian companies. "Mostly in the last three years we have seen this phenomenon. We are very near to the point where we can export … believe me, we have the best engineers. You can see it in the fields.

"Companies that come to IR Iran see lots of knowledge. They come for collaboration, consultation. If a company comes here thinking we know nothing, they won't be successful, because we already have deep knowledge."

OPEC-India Energy Dialogue

# Evolving Indian relations

*The second High-level Meeting of the OPEC-India Energy Dialogue was held on May 22, 2017, in Vienna. The event built on the first High-level Meeting that took place in New Delhi, India, in December 2015. The* OPEC Bulletin *reports on the ministerial event, as well as a technical meeting that followed, in which viewpoints were exchanged on various global oil and energy issues.*


*Mohammad Sanusi Barkindo (c), OPEC Secretary General; with Dharmendra Pradhan (l), India's Minister of Petroleum and Natural Gas; and Hasan Hafidh (r), Head, PR and Information Department; during the press conference.*

As part of its global energy dialogue outreach, the OPEC Secretariat hosted the second High-level Meeting of the OPEC-India Energy Dialogue in late May. The Meeting was co-chaired by the OPEC Secretary General, Mohammad Sanusi Barkindo, and Dharmendra Pradhan, India's Minister of Petroleum and Natural Gas.

Minister Pradhan initially paid a courtesy visit to the Secretary General before the Meeting convened. The two discussed the short-term oil market situation, including developments since the landmark decisions taken by OPEC Member Countries and 11 non-OPEC nations at the end of 2016. The Secretary General told the Minister that OPEC and participating non-OPEC nations remain steadfast and resolute in seeing through this market rebalancing process, in the interests of both producers and consumers, and the global economy as a whole.

The two Heads of Delegation also shared their thoughts on the benefits of the producer-consumer dialogue, with specific reference to the International Energy Forum (IEF). The next IEF Ministerial Meeting (IEF16) will be held in New Delhi in April 2018.

## Ministerial remarks

In his opening comments to the Meeting, the OPEC Secretary General recalled the extremely warm welcome he received from Minister Pradhan when he spoke at the 'Petrotech' conference in New Delhi in December 2016, as well as his valued support for OPEC's oil market stabilization measures. He also noted the bold economic reforms undertaken by Indian Prime Minister Narendra Modi. He applauded the demonetization and the General Service Tax initiatives, and the way India had managed to overcome the global economic slowdown.

In terms of the dialogue, Barkindo said it was easy to appreciate the value and substance of the ongoing cooperation, particularly when looking at the ever expanding relationship between India and OPEC's Member Countries.

Since 2000, trade between India and OPEC has grown substantially. "India's overall imports from OPEC Member Countries increased from just over $4 billion to a high of above $170bn in 2012, before dropping slightly in recent years. And in the other direction, OPEC's total imports from India increased from just under $4bn in 2000 to over $60bn in 2014," stated Barkindo.

"In terms of crude oil, India's total imports have risen from around 1.5 million b/d in 2000 to close to 4.3m b/d in 2016," he added. "In fact, in 2016 India was the fastest-growing oil demand nation globally, with an increase of close to 340,000 b/d, or 8.3 per cent."

Looking ahead, said Barkindo, India will continue its tremendous economic growth. In OPEC's World Oil Outlook, it is estimated that India's economy will grow at an average annual rate of 6.9 per cent for the period 2015–2040. Real GDP is expected to surpass OECD Europe by 2034 and by 2040 it is anticipated to be about the same size as OECD America.

"From the perspective of oil, demand growth will increasingly shift to India," the Secretary General said. "By 2040, India's oil demand is anticipated to increase by over 150 per cent, from around 4m b/d presently to 10.1m b/d by then. Its total share of global oil demand will rise from four per cent, to over nine per cent by 2040."


*Dharmendra Pradhan (second r), India's Minister of Petroleum and Natural Gas, with his team.*

He stated that he saw enormous value and substance in the Energy Dialogue, particularly when looking at the ever-expanding cooperation between India and OPEC's Member Countries. "With OPEC home to over 80 per cent of the world's proven crude oil reserves, and with many of its Member Countries well-positioned for exports to India, it is clear that this cooperation will expand further," he said.

In his opening remarks, Minister Pradhan underlined the importance of the Energy Dialogue, as well as the cooperation between OPEC Member Countries and India, with 86 per cent of the country's crude oil imports coming from OPEC nations.

From the perspective of the Indian Government, he said there were four key priorities in the energy sector:

- *Energy access*
- *Energy efficiency*
- *Energy sustainability*
- *Energy security*

In terms of energy access, he stated that the Indian government is committed to providing clean and affordable fuel to all of its citizens. Today, Minister Pradhan said, "lots of people still do not have ready access to quality energy" and it is vital to expand energy access to everyone in the country.

He also highlighted the growing role of renewables in India but stressed that hydrocarbons would remain central to the country's energy future. In this regard, he underscored the importance of India's expanding refining and petrochemicals sector, and its dynamic companies. In fact, his delegation to the OPEC Secretariat included seven Chief Executives, from both the public and private sectors in India, who head all of the country's 23 refineries. Together they process around 4.7m b/d.

Minister Pradhan concluded by saying that "we are confident that the India-OPEC engagement will prove to be a very productive dialogue mechanism to grow together," and he said he looked forward to welcoming an OPEC delegation to India for the third High-level Meeting in 2018.

*Mohammad Sanusi Barkindo (c), OPEC Secretary General, with his team during the deliberations.*

## Outlooks and technical exchanges

The High-level Meeting also saw presentations from OPEC on short-term oil market developments, as well as the long-term energy outlook. This included some analysis on the ongoing forecast for oil market rebalancing, the outlook for the global economy, oil supply and demand for the remainder of 2017, as well as medium- and long-term challenges and opportunities. The Indian delegation presented information on the potential for long-term crude and gas supply cooperation between India and OPEC Member Countries.

A technical meeting of experts from OPEC and India was also held following the High-level Meeting to analyze various issues, as well as look at ways and means to enhance cooperation in the coming years.

In the technical meeting, OPEC focused on the long-term oil demand outlook in the Asia Pacific, with particular emphasis on India. This included an analysis of trends and drivers for future oil demand in various consumption sectors with a special focus on the road transportation and petrochemical sectors. India, in turn, considered the country's long-term energy demand, as well as its energy mix, in light of emerging energy and climate change policies.

## Advancing dialogue

There was clearly much for both Parties to discuss and digest, especially in terms of better understanding some of the challenges, as well as the opportunities, faced by both OPEC and India today. However, such considerations should not only be between the Secretariat and India, both Parties noted.

It is equally important to further expand direct dialogue between Indian companies and their counterparts in OPEC Member Countries — particularly in the downstream — to help meet the ever-growing demand for oil in India. This remains something to look forward to.

*Delegates attending the 2nd High-level Meeting of the OPEC-India Energy Dialogue gather for a group photo.*

# OPEC and non-OPEC extend dialogue with discussions on US tight oil

***The 1st Technical Meeting of OPEC and non-OPEC producing countries, all signatories of last year's 'Declaration of Cooperation', took place at the OPEC Secretariat in Vienna on May 19. Featured at the Technical Meeting were a number of tight oil experts from the United States who shared with participants their views on various aspects of tight oil developments in North America.***

*By Maureen MacNeill*

At the start, OPEC's Secretary General, Mohammad Sanusi Barkindo, warmly welcomed all delegates to the Meeting, who represented the 24 countries that had participated in the 'Declaration of Cooperation' of last December. He stated: "this collaboration is ripe for expansion ever further." He also noted that the Technical Meeting was part of an ongoing process of structured and sustained dialogue and cooperation that OPEC hopes will pave the way to a healthy and growing oil market.

The Secretary General praised the exemplary leadership roles played during the lead-up to the 'Declaration of Cooperation' by Mohammad Bin Saleh Al-Sada, last year's President of the OPEC Conference and Qatari Minister of Energy and Industry, and his non-OPEC Russian counterpart, Energy Minister, Alexander Novak, before proceeding with the agenda.

The meeting began with a closed session, during which delegates addressed the latest short- and long-term market developments. Then, after hearing from invited US experts in the morning, they held discussions on various other topics related to recent developments in the oil market.

Central to the evolution of the oil market in recent years has been the development and expansion of US tight oil. In 2010, US tight crude production was around 500,000 barrels/day, but by 2015 it had risen to over 4.5 million b/d. It fell in 2016, on the back of the lower oil price environment, but in 2017 it has started rising again. This raises a question posed to the speakers at the meeting: what does the future look like for US tight oil?

## The shale plays

In terms of the major US tight oil plays — the Bakken, the Eagle Ford and the Permian — it was evident that the main focus today is on the latter. It was noted that the Bakken can be expected to see zero growth by 2020, irrespective of the oil price. The Eagle Ford was seen as being of "intermediate status" in terms of maturity and though it is anticipated to still be a powerful shale play by 2020, it will not, as one speaker noted, "be super-powerful".

It was the Delaware Basin of the Permian that speakers underscored as being the foremost growth driver in the coming years. One speaker talked about the rate of well completions in the Delaware Basin as being "astounding" and this is expected to continue. Overall production in the Permian Basin, noted another speaker, is expected to be up by 1.7m b/d between 2016 and 2020.

With tight oil, sweet spot exhaustion is an important factor, and this was highlighted at the meeting. One speaker stated that the Bakken is already 72 per cent developed, while the figure for the Permian is only ten per cent.

Another key issue relates to well productivity, which has been rising. One speaker stressed that average peak production per well in 2011 was 392 b/d, but this has now grown to 750 b/d. Additionally, the number of days it takes to drill has fallen over time and wells are now being drilled increasingly deeper.

Cost efficiencies have also been important, particularly over the past couple of years. For example, it was noted that the typical horizontal well in the Bakken in 2014 cost $8.2–8.3 million to drill when oil was at around $100/b. Today, it is about $5.2m. In the Eagle Ford it is less than $5m and in the Permian it is down to $4.5–4.6m.

One of the major reasons behind this drop in costs has been the fact that the service sector has had to cut costs significantly. However, it was underlined that service costs are expected to rise this year, as more rigs have been added in 2017 and demand for services increases again. Moreover, it was noted that service sector companies have been living unsustainably for a number of years.

In addition, it was stated that given the fact that tight oil production fell last year, it will be easier to grow in 2017 as the base

decline will be relatively low. A larger base decline is expected in 2018.

Besides tight oil, speakers also spoke about other US production, particularly the US Gulf of Mexico (GoM). It was emphasized that the region has suffered greatly from the lower oil price environment.

Although new projects are currently coming onstream because of investments taken three to six years ago, there is currently very little sign of greenfield exploration projects. It was stated that the situation in the GoM will not improve unless WTI prices reach at least $70/b, and production is expected start to fall at current prices by 2020, as there will be no new investment in exploration.

## Small players and financing the machine

Almost the entire shale revolution has been built by small oil companies, according to the speakers, with about 90 per cent of the shale revolution propelled by independent producers. It was noted that independent companies are very different from international oil companies on many fronts, including their mind-set, which is focused on growth. They pay almost zero attention to profitability and the rate of return on investment.

Additionally, independent firms have often appeared to have an almost unlimited access to money, both public and private. And they can change their financing portfolio "on a dime", sometimes within months or even weeks.

Financing is at the core of understanding how much the 'shale machine' can go faster or slower, said one speaker. There is no other place in the world, they added, where there are such amounts of money that could be accessed and deployed into these types of developments, and with such speed. This is vital, as budgets are calculated on a one-year basis and the concern is how much cash is immediately available.

Different pockets of capital finance are available for different segments of E&P, dependent on a number of variables, particularly price. And these different pockets react differently, which in turn, determines the speed of growth.

In the downturn, high yield bond markets were the most affected form of financing and this choked off small private and independent players. However, one speaker said that high-yield bonds have been flowing back in at a "neck-snapping" rate.

It was also noted that the US tight oil bankruptcies that took place during the downturn did not cut deeply into production, though many companies still have elevated debt levels.

Developments in the overall energy sector were also put into the context of the US economy, with one speaker saying that is responsible for 30–35 per cent of the US's overall GDP.

## Looking ahead

Looking ahead, one speaker stated that the price curve is the key to understanding market behaviour. When prices increased in early 2017 a lot of companies hedged. The question is how financing will look in 2018 and how much will be hedged in the coming months.

In terms of the three main basins, it was emphasized by one of the speakers that having all three developing and producing at around the same time has put a strain on the oil market.

However, it was noted that this should be viewed as a short- to medium-term phenomenon, with the Bakken and the Eagle Ford expected to see a plateau in the coming years. Additionally, it was said that it is unlikely that any new shale plays on the scale of these three will be found in the US.


*Delegates attending the 'Declaration of Cooperation': 1st Technical Meeting of the OPEC and non-OPEC Producing Countries.*

# Mark Papa's vision

***Mark Papa** (pictured left) is a leader and pioneer behind the shale revolution in the United States. Formerly CEO of EOG Resources from 1999 to 2013, he retired after turning that company into the largest oil producer in the lower 48 US states. Now a partner at private equity firm Riverstone Holdings LLC, Papa continues to invest in shale plays and remains a strong voice in the US shale industry. He was at the OPEC Secretariat, along with other tight oil experts, to speak to attendees of the 1st Technical Meeting of OPEC and non-OPEC producing countries, held on May 19. While there, he found time to share some of his views with the* OPEC Bulletin's ***Maureen MacNeill** in an exclusive interview.*

***You founded EOG Resources, where you had a lot of 'firsts'. The company is still a top performer today. Now you are advising Riverstone. Do you think there are anymore 'firsts' to be had in shale oil?***

I am not sure there are any more firsts in the shale industry to be had. I think all the major North American shale fields have already been found. I would be surprised if hear of any new significant oil field discoveries.

When I ran the company [EOG], it was the established leader in shale oil exploitation technology, which really involves hydraulic fracturing technology and things like that. And it continues to be the best in the industry even after my retirement. There may be some new enhancements to technology that will come about, but I will be surprised if there are any absolute breakthroughs. I think we will see some evolutionary breakthroughs but not any 'revolutionary' breakthroughs as we go forward. I think you've seen the revolutionary things happen already — and now it's just going to be the incremental changes that will happen in the world of shale oil technology.

***Has anything about the oil market recovery over recent months surprised you — anything about the price structure or the speed of recovery?***

I believe what happened is that when OPEC announced that they were going to curtail production for six months and then revisit it, I think that stimulated a wave of optimism among US shale oil producers. The corner had been turned regarding prices and, yes, production had been declining up to that point. For the full calendar year of 2016, US production declined by about 550,000 b/d and then as we rode into 2017 you saw a bit of optimism from US producers and you saw an almost instant resurgence in drilling activity among the producers.

You have to remember, the shale oil industry in the US is about 90 per cent comprised of independent producers. It's not the Shells or the BPs or the Exxon Mobils; it's much smaller companies and they are very nimble, so they can retool their capital budgets or change their investment strategy literally within a week or two. That is what they did; you saw a burst and an increase in the number of drilling rigs being put to work — and so it appears that you're going to see a change from a decrease in total US production in 2016 to an increase

*Mark Papa.*

in US production in 2017. I would estimate the increase in 2017 will be in the range of 400,000–450,000 b/d y-o-y. That's what we discussed with the OPEC Secretariat: what could be the impact of that change.

On a go-forward basis, is that sustainable in 2018?

The year 2017 is a done deal already, … the momentum is there and the year is already half done. The question is going to be: what will happen in 2018? And that's going to be a function of what the May 25th OPEC decision is and what happens to oil prices in the second half of the year. There is a range of possibilities of what could happen. One thing that is certain at this time is that producers' reaction will be a very nimble reaction — either scaling up or down the level of drilling activity in the US.

"… the shale oil industry in the US is about 90 per cent comprised of independent producers. It's not the Shells or the BPs or the Exxon Mobils; it's much smaller companies and they are very nimble …"

***Did you expect the Declaration of Cooperation, first of all, to take place and then to achieve the level of nearly 100 per cent conformity with the agreed-upon production adjustments?***

As kind of a neutral observer, no, I did not expect the Declaration of Cooperation to take place and I expected [conformity] to be somewhere perhaps around 60–70 per cent and it has been, as you say, approaching 100 per cent. Getting some of the other countries like Russia, Oman and Mexico to cooperate has been, in my mind, pretty well unprecedented. My view on the oil market is that to get this oil market back into some sort of stabilized condition we really need to clear this excess inventory — and I think the participating OPEC Members would agree. [T]hat will probably take another minimum six to nine months to get done, so we probably have another six to nine months of tepid oil prices. And it will take until that global surplus inventory is cleared before we can really figure out what is the equilibrium price of oil on a go-forward basis. So we will probably be in a bit of a surplus condition with inventory until the first quarter of 2018.

***Do you have any concerns that a few years down the road***

***there is not going to be enough oil produced worldwide because of a lack of investment?***

Yes. In one of the discussions we had at today's meeting, what we really focused on is what are the motivations and likely outcomes with US shale producers. But I purposely focused a bit of my time and presentation on what is going on in the US Gulf of Mexico (GoM), specifically deepwater (oil production) and what's been the impact of chronically low oil prices on that.

Two things strike me about the global oil market. First, there's been a significant lack of investment in deepwater oil projects — not only in the US GoM but other places that are typical deepwater oil areas, such as Angola and Nigeria. Because of the lead times to bring deepwater to market, where that impact will be felt is really in 2019 and it will be felt for probably at least five years starting in 2019. That's going to be a significant issue to meet global oil demand.

The second point is a very salient point relating to global oil markets: most forecasters have consistently underestimated global oil demand growth for at least the last three years. Typically, most forecasters have included forecasts of annual demand growth of between 1.0 and 1.2m b/d per year for the last three years. Actual demand growth during the last three years has turned out to be between 1.3 and 1.5m b/d each of those years. People have said the economy of China is slowing down and that, therefore, we should be conservative with our demand forecast. I am not an expert on the Chinese economy, but the numbers I see year after year indicate that demand for oil in Asia overall has been remarkably robust. All you have to do is check the sales of vehicles in the US and what you see is that American consumers are buying pickup trucks with very big gasoline-consuming engines and they are shunning small gasoline engine vehicles that get great miles per gallon. So people are voting with their pocketbooks to not particularly go for the most gasoline-efficient vehicles even in the US. Consequently, total global oil demand is going to reach 100m b/d in 2019 and by 2020 my estimate is it's going to be about 101.5m b/d.

That brings me to another conclusion, which is that a lot of people say the US oil shales are likely to continue to flood the market with oil and perpetually depress oil prices. I would just reverse that statement and say that for us to meet the world's demand for oil in 2020 of slightly over 101m b/d we are going to need the US oil shale machine to be turned on as well as OPEC. Combined OPEC production plus US oil shale production will, if we are lucky, barely satisfy global oil demand in 2020. So I look at it from an optimistic point of view. We are going to have a reasonably tight global supply/demand situation by 2020 and we are going to need a pretty good partnership between OPEC and US shale producers to meet the world's oil demand by then.

***OPEC's Secretary General has been initiating a dialogue with American producers. What potential do you see for this to develop in the future?***

I think dialogue doesn't hurt. Communication doesn't hurt. I find that having a mutual understanding of what some of the parameters are is probably a good thing. I think there are certainly some limitations in the US about having a dialogue — to make sure it doesn't include anything relating to pricing or production limits or anything like that — but to give OPEC an understanding of what the mechanisms are of shale production is good, and to have communication and have that sort of discussion is good. They are more along the lines of technical discussions because this whole oil shale situation is really an unusual beast. It's an unusual type of reservoir. It's like a manufacturing process. So to have a discussion on how that manufacturing process works is probably a good enterprise to have.

> "Two things strike me about the global oil market. First, there's been a significant lack of investment in deepwater oil projects and most forecasters have consistently underestimated global oil demand growth for at least the last three years."

***Do you see American oil production peaking at some point?***

The most the US has ever produced in its history occurred in 1970 when the Alaskan North Slope production peaked and that was at 10.0m b/d. It looks likely that

in 2018 or early 2019 we will surpass 10.0m b/d in the US, almost exclusively driven by US shale production growth, so I would say it's almost certain that we are going to 'whiz' right by that production record, which was set 47–48 years ago, and that we will be achieving a new production record in the US. So I don't see it peaking anytime soon. I forecast out to 2020 and see it continuing to grow through 2020 — unless we have another massive, terrible price decline where oil prices fall back to $28/b. But absent some terrible price decline, I see it growing. The amount of growth will be a function of what exactly the oil price is between now and 2020.

"It looks likely that in 2018 or early 2019 we will surpass 10.0m b/d in the US, almost exclusively driven by US shale production growth ..."

***Has the type of financing for shale oil been affected by recent market conditions? Were there more of a certain type of investor before the oil price crash and has it changed?***

If you're sitting over here in Vienna, you would have heard of bankruptcies of oil and gas companies in the US and related service companies. But what I would say is that there were a number of oil and gas companies that went bankrupt — or as we call it in the US, [filed for] Chapter 11 — but the amount of production that was associated with those companies was rather miniscule on a national scale and the impact on the overall industry was very, very small. They got a lot of headlines [that] read: "oil companies going bankrupt." But the fact is that no consequential-size oil companies went bankrupt, only ... some very small oil companies. Even of those very small companies that went bankrupt, many of them got restructured in bankruptcy and in a matter of a month were back in business.

"For the industry to have gone through a downturn where oil prices got as low as $28/b, and with a price that used to be $95/b, and is now hovering at roughly $47/b, it is surprising that there wasn't more significant damage ..."

There were obviously a lot of layoffs and so on, but if you look at the amount of capital available to the industry today — even in a world where oil prices are currently $47 in the US — there is a lot of capital available for the upstream side of the business. For the industry to have gone through a downturn where oil prices got as low as $28/b, and with a price that used to be $95/b, and is now hovering at roughly $47/b, it is surprising that there wasn't more significant damage to the industry than actually occurred. In other words, the industry got through this with much less damage than what I would have expected if you would have told me that this is what's going to happen to the industry, and that prices are going to go to this level. The structure of the industry is still pretty solid and capital is not currently a limitation to companies who want to find the capital to drill oil. It's just amazing.

***In an interview with the* OPEC Bulletin *just over a year and a half ago you predicted that investors might be more cautious to step in.***

They perhaps are slightly more cautious, but not in a major way ... which is really a bit surprising, considering all that has happened.

***Has technology played a role in the speed of the comeback or in increasing efficiency?***

Certainly the downturn has forced oil companies to get more efficient. Every company has asked itself: "How do I become at least cost breakeven? How do I lower my breakeven costs so that I can at least be cash flow neutral at say a $45/b oil price?" So there have been all kinds of efficiencies that have been forced into the system by economics. And with regards to technology improvements, you've seen some improvements in the last 24 months. But I'd say the rate of technology improvement has slowed down, mainly because most companies are just trying to stay alive at this time and their focus is not on pushing for vast technology enhancements. It's really just about trying to keep their doors open for business during this particular time. So we haven't seen any massive improvements in technology. It really was a kind of cost-cutting and, depending which part of the business you were in, some of it was ... massive.

*Mark Papa.*

***Although the US oil export ban was repealed a while ago, it has probably not had that much of an effect yet. Do you think it will be something that will play a role later?***

Yes, I think the [repealing of the] export ban will turn out to be significant. What prompted the push to remove the export ban was that US oil production was rising pretty fast — and the problem was that US refineries were all designed to handle a certain mix of sweet versus sour crudes, and all the crude produced from shale oil produced is sweet. So the refineries in the US were having difficulty digesting an ever-higher percentage of sweet crude because they weren't really designed to handle a whole lot of sweet crude. A lot of them, particularly on the Gulf coast, were designed to handle ever-increasing imports of sour Venezuelan crude, for example.

So what was happening was that the capacity of US refineries to handle all this sweet US crude was in doubt. We were producing ever-increasing amounts of oil but found ourselves in a position — if you project it out a year or two — of [how] can we refine all this oil being produced in the US if we were banned from exporting it? We [thought] we might have to shut it in, in the US, because we [were] not allowed to export it. That was the situation we were in. The solution was: let's repeal the ban … if our own refineries can't solve the problem. And then, about the time the [repeal] came in is when oil prices fell — and so US production fell simultaneously [but] it [didn't] really matter because we [were] producing less US oil. Everybody said: "That's typical legislation. About the time we got the legislation in, we don't need it." But now you turn it around and we are talking about US shale oil increasing over the next several years and this issue will again come up. So the fact that the export ban [has been] removed could become very critical over the [next] two or three years. It's a very positive thing that the export ban is now not in existence.

# BP's Chief Economist shares his views on the oil industry

By Maureen MacNeill

***Spencer Dale, BP's Chief Economist, jokes that wherever he goes, bad luck follows. When he became chief economist at the Bank of England in 2008, it was two months before the Lehman Brothers crash, which sent reverberations through the entire world economy and he struggled, along with his colleagues, to try and restabilize Britain.***

*Spencer Dale, BP's Chief Economist.*

When he joined BP in October of 2014, the oil price had been over $100/barrel for a number of years, but his arrival coincided with a sudden price collapse, creating another challenging environment for him to work in.

One could argue that it has been exactly these challenges which have shaped him into one of the world's most respected economists today.

And, as an economist he asks, "do you think you can forecast 20 years ahead? No, you are certain to be wrong. But that is not the value of a forecast, to see if it is right or wrong. It is to help better understand the uncertainties one faces and their nature.

"You can not say you know what will happen, but you can seek the most likely path and explore how it will change with different factors."

He says developing an outlook every year has value because even if the main contours do not change, the future questions can. Publishing it is essential, he adds, because: "I know of no better discipline than exposure to public scrutiny. The greatest danger is 'group think', where you don't consider others' opinions."

People love to tell you what is wrong and as a result you get smarter, he adds with a laugh.

Dale expects the world's economic future to be characterized by a drop in population growth, and an increase in productivity. Two billion people will move from low to middle income in the next 20 years, supported by plentiful energy. Due to this advancing middle-income prosperity, there will be a sharp increase in energy demand, but for upper-income people energy consumption flattens out. Global energy demand is projected to grow by 30 per cent over the next 20 years, primarily coming from emerging markets. Energy intensity is expected to decline more rapidly over time as countries become more efficient. Even though renewables are fast growing, they are expected to move from supplying three per cent of energy needs today to only ten per cent by 2035. Natural gas looks set to grow faster than oil and coal because of abundance of supply and environmental policies; LNG will grow strongly. There will be steady growth in oil, though its share of the energy pie will be smaller. Peak oil demand is not likely over the next 20 years. Coal is expected to have the sharpest break with the past and peak around 2020.

OECD oil demand has been down for the past ten years and is expected to continue to fall, he added, though world oil demand will grow by 15 million barrels/day over the next 20 years, two-thirds of which will be driven by transportation. Vehicle efficiency will cause the growth rate to slow over the next 20 years, down to half, or 0.5m b/d of growth by the end of the outlook period in 2035.

However, accompanying the period of slowing demand for transportation, the importance of using oil for feedstock will grow. Currently, there are one billion

cars on the planet, a figure expected to double over the next 20 years, he said, with nearly all the growth in developing countries.

The dominant demand sector for oil as far as can be seen into the future will come from transport, says Dale, not just cars, but also trucks, planes, trains and ships.

"Transportation is likely to account for the majority of oil demand for as far as we can see in the future, and it is also likely to account for the lion's share of growth we will see in oil demand over the next 20 years. If we look further enough into the future, by the end of our outlook in 20 years' time or so, as the growth of oil in transport starts to fade, you may start to see the non-combusted use of oil, particularly as a feedstock for petrochemicals, become a key source of growth in oil demand."

As for the short term, the world economy seems to be doing better than in recent years and looks set to pick up this year compared with rather weak growth last year. This growth is likely to be synchronized across the world in both the OECD and developing world, states Dale, though risks are to the downside, with uncertainty over US interest rates, as well as great uncertainty about geopolitical issues, with more instability in this area than seen in a very long time, he adds.

Demand has grown exceptionally strongly in the past few years, stimulated by the fall in the oil price, says Dale, particularly in the OECD. If prices remain around current levels, it is likely to provide a continuing boost to oil demand, but the impact of that boost will gradually fade over time.

"I expect relatively solid growth in oil demand, with a backdrop of the economy picking up in the next year or so. If prices remain relatively low, this should support relatively healthy growth in oil demand. Not perhaps the same rates seen in 2015–16 but still relatively healthy relative to the ten-year average."

## New economics of oil

Textbooks have always said that oil is an exhaustible resource that will eventually run out, says Dale. "One aspect of the new economics of oil is recognizing that we are highly unlikely to ever run out of oil. It is very likely that some recoverable barrels of oil will never be used."

Because oil was expected to eventually run out, this implied that prices would rise over time, and that underpins a lot of existing thinking and strategies, he adds.

The second aspect of the new economics of oil is the effect of tight oil on the supply-demand curve, says Dale. It was always said that the supply and demand curves are very steep and they didn't respond much to price, he says.

Very steep demand and supply curves tend to generate significant price volatility, since if there is a shock to either demand or supply, prices need to move a lot to stabilize the market. However, tight oil can turn on and off rapidly, states Dale. It is a matter of months from drilling to producing oil and likewise because decline rates are so sharp, once investment stops, supply comes off very quickly, he says.

"Tight oil has introduced a flatter bit into the oil curve and what that means is that prices will be less volatile than they otherwise would have been. More of the impact of any shock can be taken in terms of tight oil moving up or down, less in terms of prices."

Nonetheless, tight oil cannot adjust production on and off like OPEC can, he adds. OPEC can decide in a meeting in December to adjust its supply of oil by 1 or 2m b/d by January or February and it can deliver that. For tight oil, turnaround times are not measured in one or two months, but can be measured in 6–12 months, he says.

"So if I look at the pace of which tight oil responded to the price fall in 2014–15 it took 6–12 months, but then we saw a dramatic shift in supply. It can respond far more quickly than conventional oil projects, but not as quickly as OPEC can."

*Spencer Dale (r), BP's Chief Economist, with the OPEC Bulletin's Maureen MacNeill.*

The third point, says Dale, is that textbooks thought OPEC would always smooth the oil price. His argument is that the textbooks were wrong.

"I always think that the power of an Organization like OPEC is to shift supply from one period to another, as a result it is very good at responding to temporary shocks. So if demand is weak for a period, it can adjust supply temporarily to stabilize (the market) and as demand picks up it can then increase supply again.

"Likewise if some countries suffer supply disruption it can increase supply to stabilize (the market) and when the disruption eases then take supply back off … but it cannot smooth out structural shocks.

Saudi Arabian Minister of Energy, Industry and Mineral Resources, Khalid A Al-Falih said at CERAWeek (held in Houston, Texas, March 6–10, 2017) 'that history had shown that OPEC could


*Spencer Dale, presenting BP's Energy Outlook 2017 at the OPEC Secretariat.*

respond strongly to short-run aberrations but not long-run structural factors,' states Dale. The reason I use this in the context of the new economics of oil is because the emergence of tight oil was not a short-run cyclical shock it was a structural shock, a new source of supply and so faced with that development, it seemed to me the way OPEC behaved was entirely consistent with the economics of OPEC in the sense it couldn't smooth through the impact of this structural change. Lots of economists seemed surprised with that behaviour but to me it seemed consistent with this theory."

He adds that BP's data shows that in 2015 the US was the largest oil producer when measured in terms of barrels of oil produced. He says in their 20 years oil outlook, US production grows by another 4–5m b/d of oil supply.

"That is stronger growth than we expect to see in any other single country, so I expect that the US will reestablish itself as the world's largest oil producer and will likely remain so in the foreseeable future because of growth in US tight oil. We think US tight oil will at some point stop growing, but we do not see it falling back very sharply, just plateauing."

## Mobility revolution

The mobility revolution is already happening, according to Dale.

He says: "You can see it on the streets today. I think this will completely revolutionize the car market over the next 40–50 years. It will grow very rapidly. The relationship many of us have to our cars is likely to change significantly."

But the impact on oil demand over the next 20 years will not be huge. In 40–60 years it will be much bigger, he states.

Dale predicts very rapid growth in electric cars by 2035, with numbers jumping from one million today to 100 million by then, growth of over 20 per cent/year. He adds, though: "I am not at all confident in this forecast, there are huge uncertainties, such as technology, policy and social preferences."

And while this sounds like a large amount, it is "not a game changer" regarding oil demand, says Dale. The main messages are that: "even if electric cars grow far more quickly than we expect, their effect on oil demand over the next 20 years is likely to be small. Moreover, we should talk more about vehicle efficiency. This is orders of magnitude more important."

He states that electrical vehicles and fuel efficiency are two ways to achieve the same outcome in terms of vehicle emissions.

An autonomous, self-driving vehicle is estimated to be 25 per cent more efficient. Moreover, car-sharing is likely to increase, meaning cars will be used more intensely, maybe three to five times as much as a normal car today. If cars used for car sharing have the latest technology, then more miles will be driven by new technology cars, squeezing out internal-combustion engine cars and leading to a drop in oil demand. In addition, subsidies may make up for the higher cost of these cars.

If electric cars really grow, and they are used for sharing/pooling, it will have a bigger impact. Car sharing is a potential game changer, claims Dale, and it is likely to happen rather quickly given the internet/digital possibilities that already exist.

## Global energy transition

Dale thinks there is a significant energy transition already underway and that it has many different dimensions. One is that the growth of energy demand is shifting from the developed world to developing world, he states.

"All the growth in energy demand in the next 20 years is likely to come from fast-growing emerging economies driven by increasing prosperity and the growing middle

class … and two countries which absolutely lead that charge are China and India."

However, the growth rate for overall energy demand is slowing due to greater improvements in the pace of energy efficiency. In addition, there is likely to be a continuing shift in the fuel mix away from carbon fuels, particularly coal, towards cleaner, lower carbon fuels like natural gas and renewables, he says.

"We see renewable energy — wind and solar — growing very rapidly over the next 20 years, being the fastest growing energy in history in terms of the pace at which it penetrates the energy system. But even so, there is still likely to be a significant role for oil and gas in powering the global energy system over the next 20–30 years, and I think that is important."

## China and India

As the world continues to electrify, around two-thirds of the energy increase over the next 20 years is projected to be absorbed by the power sector, says Dale. He adds governments who are serious about the 'energy transition' should look at the power sector. China's energy transition has been faster than expected, Dale says, with the reduction in coal-fired power generation occurring much more quickly than expected and new energy sources coming mostly from renewables.

China's GDP growth is slowing and over the next 20 years is expected to average around half of the ten per cent it that it averaged in the past, says Dale, adding growth in energy consumption will slow sharply from the extraordinary growth experienced in the 1990s and 2000s.

The pattern of growth is shifting away from industry to consumer services. Additionally, China has an extraordinary nuclear programme, claims Dale. "Their programme is roughly equivalent to building a new reactor every three months for the next 20 years."

Although China is committed to shift progressively away from coal, 62 per cent of the country still gets its energy from this commodity. It is on course to reduce this share to 45 per cent by 2035, "but to achieve this they need to grow other energy very quickly."

India is different, he adds. Its growth rate is not likely to slow sharply (it is now at 6.75 per cent), moreover its industrial structure is already closer to that of Western economies, with less scope to deindustrialize.

"Do not expect a sharp slowing in India's energy consumption like in China. In volume terms, China is so big, but India could nearly catch up in terms of energy growth," he says.

## Recoverable oil

There are estimated to be 2.5 trillion barrels of recoverable oil with today's technology, said Dale, which is more than double the oil which is needed meet the world's oil demand out to 2050, and much more oil could be recovered. "It is increasingly likely that some technically recoverable oil will not be recovered … we are unlikely to run out of oil."

Both low- and high-cost producers coexist in today's market, he continued. That may well change in the future.

BP's investment plans in the near term focus on capital discipline, says Dale, making sure the business can be rebased to adapt to lower oil prices, which are likely to remain relatively low for some time.

"But we see the demand for oil continuing to grow for next 20 years, so we need to invest in oil as well as natural gas. For oil, our main focus is low-cost oil, often where we have already have relationships and infrastructure."

Dale adds that BP already has very good relationships with many OPEC Countries. It just renewed a large contract with Abu Dhabi, co-runs one of the biggest oilfields in Iraq and has close relationships in Kuwait, "just to name a few. We pride ourselves on having close relationships with many OPEC Countries."

*Spencer Dale (r), with Oswaldo Tapia, Head of OPEC's Energy Studies Department.*

## OPEC/non-OPEC cooperation

The OPEC/non-OPEC cooperation has been a significant event for the oil market, states Dale. Initially there was a big question about the level of conformity to the production adjustments, but relative to expectation it has been stronger, he stated.

"The cooperation is likely to speed the adjustment of oil stocks to more normal levels and so help to stabilize the market.

"I think this has reminded people that in response to certain situations, OPEC and wider groupings of countries can have an influence on market dynamics for a period of time and that OPEC remains a very significant force in the oil market now and likely into the future."

# OPEC Member Countries discuss improving statistical input at annual meeting

*Adedapo Odulaja, Head of OPEC's Data Services Department.*

*Oswaldo Tapia, Head of the OPEC's Energy Studies Department, In charge of the Research Division.*

*Dr Hossein Hassani, OPEC's Statistical Systems Coordinator.*

***This year, 33 attendees from eight OPEC Member Countries participated in OPEC's 16th Annual Statistical Meeting. The annual event once again provided delegates with the opportunity to meet with fellow statisticians from other Member Countries and discuss statistical data with the OPEC Secretariat's own specialists. The* OPEC Bulletin's *Maureen MacNeill filed the following report.***

Participants at this year's Annual Statistical Meeting (ASM) once again examined the figures and data-gathering process that underlie much of the work of the OPEC Secretariat. The 33 participants, joined by the Secretariat's own statistical experts, engaged in the ongoing process of considering ways to improve the flow of oil and energy statistics regularly submitted to the Secretariat by Member Countries (MCs). They exchanged technical knowledge and field experience with their counterparts in other MCs, discussed how best to use the Secretariat's statistical database, and explored the different energy databank management practices that are employed.

Held on April 26–27, the various sessions of the ASM explored the support that statistics provide to the work of the OPEC Secretariat, specifically the studies considered by the OPEC Ministerial Conference when making its collective decisions. These statistics aid OPEC Members in making decisions with regard to their oil industries, including deciding production levels and how much to invest. The data is also used to inform the deliberations that determine how the Organization can best fulfil its Mission.

In his opening remarks, Oswaldo Tapia, the Head of the Secretariat's Energy Studies Department and Officer-in-Charge of the Research Division said the heart and soul of OPEC's work is based on statistics and analysis. Thus, he said, comprehensive, timely and reliable data is indispensable.

"OPEC produces about 40 per cent of the world's oil, and our production data is essential for experts around the globe to

calculate the world's oil balance, and how supply and demand can be matched," he said. "One thinks of rigs, drilling, refining and infrastructure when talking about the oil industry, but behind the scenes the figures we collect determines the flow of events."

Many of OPEC's publications rely on high-quality data, continued Tapia, including the *Annual Statistical Bulletin,* the *Monthly Oil Market Report* and the *Crude Oil Production Monitoring Report,* as well as the annual *World Oil Outlook,* the Organization's flagship publications. Most of these publications are distributed to the public. "They are frequently quoted around the world, affecting the decisions of other countries and institutions," he said.

Tapia also noted that the main goal of the ASM is to improve the statistical data available for OPEC's MCs — by finding ways to strengthen the technical communications between individuals MCs and the OPEC Secretariat with a view to ensuring the smooth flow of data.

Adedapo Odulaja, Head of the Data Services Department, informed delegates that this year's ASM would devote more time to one-to-one discussions between MC representatives and OPEC Secretariat statisticians. Such discussions and exchanges, he said, have proven to be most beneficial in enhancing the data quality from each MC.

During the course of the ASM, several technical presentations were given by OPEC statisticians. Some of these included overviews of the questionnaires used for the gathering of MC data.

The use and importance of a statistical 'report card' that the OPEC Secretariat uses was also discussed for the benefit of the MC delegations. It was explained that each report card shows a country's latest performance in data provision. Each MC delegation was then issued their respective country's draft report card showing how the country performed.

Besides the plenary sessions, deliberations and discussions during the ASM included interactive one-to-one discussions with MC delegations. These discussions focused on the data they submitted for the 2016 Annual Questionnaire. The content — and the timeliness — of tables submitted to JODI Oil and Gas was also a topic, as was online supply data submissions.

*Members of the OPEC Statistics Team (l–r): Pantelis Christodoulides, Klaus Stöger, Mohammad Sattar, Mouhamad Moudassir and Ryszard Pospiech.*

The planned revisions and redesign of the *Annual Questionnaire* was also preliminarily discussed by attendants at the ASM. It was then agreed to have a subsequent follow-up meeting on the topic during the second half of 2017. Additionally, MCs agreed to submit 2017 data for the Annual Questionnaire no later than April 7, 2018.

Much of the material gathered through the Annual Questionnaire also feeds in to the preparation and production of the Annual Statistical Bulletin. Dr Hossein Hassani, the Secretariat's Statistical Systems Coordinator, reported that due to recent improvements in the process, this year the ASB was launched on June 13, 2017, the earliest launch time ever.

At the end of the meeting, attendees at the ASM thanked the OPEC Secretariat for its ongoing efforts regarding data submissions — and in providing ongoing support and improvements to the quality and timeliness of MC data.

*Delegates of the Annual Statistical Meeting take time out for a group photograph.*

# *Sticky wicket:* The conservation and risks of used lubricating oils

*The volume of lubricating oils used by transportation, industries and processes worldwide is already quite large. It may increase even further given the economic changes, population growth, and urbanization that is taking place in many countries. The use of lubricating oils not only facilitates the functioning of engines and machines, it also generates numerous challenges and creates potential environmental problems and waste. However, the industry is increasingly finding ways to respond.* ***Saadallah Al-Fathi*** *files this report on the reduction of environmental risks associated with the use of such oils — and the efforts underway to enhance their conservation.*

Used lubricating oils derived from petroleum affect the environment adversely because of the pollutants they accumulate from deterioration caused by heat and friction throughout their service life. At the same time, used lubricating oils are still a resource that should be conserved as much as possible in order to lessen the need for — and reliance on — additional crude oil and its products.

Before the dawn of the modern age of petroleum, which started in 1859, lubricants were made either from animal fat or vegetable oil. Petroleum-based lubricants emerged later, as by-products of the refining of crude oil for the generation of kerosene (for lighting purposes) and, later, gasoline for the emerging automobile industry. The processing of petroleum-based lubricants then progressed gradually as technology advanced and engine requirements evolved, especially when hydrotreating, and the use of additives to prolong the performance and service life of automotive engine oils and other equipment became more widespread.

Naturally, the increased use of lubricating oils generated the problem of what to do with the used oil and how to get rid of it, especially given that drain intervals were relatively short. In addition, it is worth remembering that dumping used oil into the environment was the norm before regulations were tightened and the reclamation of used oils (using them for fuel or re-refining them back into base oil) became more popular.

The tightening of environmental regulations and the increase of oil prices in the 1970s and 1980s were two of the most powerful stimulants for the growth in the recycling and re-refining of used oils. To a large extent, these activities continue today, though at a different pace.

Looking ahead, the future of re-refining used oils will depend largely on

the price of crude oil and competition with the processing or direct use of used oils for fuels. In other words, low oil prices may discourage re-refining projects, unless enforced environmental regulations and the support of governments serve as drivers.

## Conservation of used oils

As everyone knows, crude oil is a precious resource that is very expensive to find and develop. Its conservation is therefore a priority for many oil consuming societies. Furthermore, efforts have also been made to conserve and re-use the used oils left over from the industrial use of lubricating oils. In this regard, increasing the rate of collection is a key to conservation.

It takes one barrel of crude oil to produce the same amount of lubricating oil that can be obtained from re-refining one gallon (1/42 barrel) of used oil. And the costs, both financial and in terms of energy requirements, of re-refining are much less. Additionally, the process of re-refining can be repeated many times.

Burning used oils is also a form of conservation because the used oil is substituted for fuel oil, gasoil, natural gas or coal. Also, burning used oils at high temperatures through the use of applications such as cement kilns gets rid of contaminants such as chlorinated compounds, halogens and others, which is advantageous.

In general, many studies suggest that re-refining is better for resource conservation efforts and for the protection of the environment. A life cycle analysis conducted by Groupment European de l'Industrie de la Regeneration (GEIR) demonstrates this for almost every count of nitrification, acidification, fine particulates (PM 10) and carcinogenic risk. However, not everybody agrees with this assessment and there is no denying the fact that the world burns five times the amount of used oil that it re-refines.

## The economics of re-refining

For a long time, the prevailing view was that the re-refining of used oils was uneconomic due to the multitude of factors that work against the industry — such as the relatively high investment required compared with burning applications, the costly collection system that has to be financed by the industry, consumers or governments, the lower prices in the market for re-refined base oil compared with virgin base oil and the cost of getting rid of environmentally damaging waste in some processes.

However, recent research studies have been divided on the economic viability of re-refining. While a general rule cannot be made, re-refining projects remain country and site specific. This does not, however, rule out the possibility of its economic attractiveness in certain situations if the choice of a suitable process, plant location and plant size are made correctly.

Overall, the feasibility of re-refining is impacted by the price of oil, as higher prices mean higher base oils and, therefore, more profitable re-refining. This is well demonstrated by the increase in re-refining projects during periods of high oil prices. Generally speaking, there is large surplus capacity in virgin lube oil production shown by different supply and demand forecasts, which puts pressure on base oil prices and impacts re-refining negatively. Therefore, only large projects with viable modern processes allowing for higher grades of base oil production may be considered in any future re-refining project.

One cannot to rule out that certain countries may have a unique position with respect to favourable plant locations and a willingness to support the industry for the protection of the environment. In more than one study, government support in the form of subsidising collection and re-refining used oil was found to be necessary and much cheaper than having to deal with the environmental and human health problems of disposing used oil and that used oil is a resource that should not be wasted by dumping it in landfills. Besides subsidies, many countries charge the consumers for the collection and treatment of used oil in accordance with the 'polluter-pays' principle.

These considerations are also recognized by the International Environmental Technology Centre of the United Nations Environmental Program (IETC/UNEP) which was developed to test the Sustainability Assessment of Technologies (SAT) in the selection of re-refining processes. In licensing new projects or even assessing existing ones, governments are advised to consult the SAT, especially since used oil recovery methods may differ from country to country, and there is no single model of implementation.

The problem of stigma, as well as hesitation by consumers, will not go away easily. A recycled product is in their mind inferior and thus it suffers a price reduction in the market. In well-developed markets, this can be avoided by obtaining relevant certification from

authorised bodies such as the American Petroleum Institute (API).

The re-refining industry must content itself with the availability of surplus base stock capacity in the world. Therefore, its expansion should be directed at solving environmental problems and the needs of individual countries or regional groups if cross-border trade in used oil is allowed. However, in the majority of cases, a re-refining project needs the support of governments through regulations and subsidy. Such subsidies can either be direct or through taxation on consumed lubricants — with the tax returns going to collectors and re-refiners.

## Burning used oil

In many countries, using used oil for fuel is a competitor to re-refining. While the European Union (EU), the United States and a few other countries have given priority to re-refining, most of the used oil that is generated and collected is still recycled into fuel in high temperature industrial combustion systems (this ensures complete combustion and avoids the release of harmful substances into the environment). These systems include cement kilns, blast furnaces, power plants, industrial plant boilers and space heating on its own or blended with fresh fuels. These applications perhaps involve no more than allowing feedstock to settle in a heated tank and decanting it to drain water, followed by filtration to remove sludge and suspended matter.

At the moment, industry consultants and even country experts are divided on the advantages, disadvantages and suitability of re-refining or burning used oils. In Europe, where re-refining flourishes, the total amount of collected used oil in 2008 was 2.0 million tons, 1.1m t of which was burned for fuel against 0.7m t which was re-refined. In the US, about 2.6m t are burned against 0.53m t re-refined — though in later years re-refining has been picking up but not to the extent of eclipsing burning for fuel.

The famous *Kline Report* of 2009 estimated that collected used oil, burned for fuel and re-refined fuels constitute 16.5, 12.9 and 2.6m t, respectively, as the world burned almost five times more than it re-refined.

Regardless, the burning of used oil for energy recovery is to be treated seriously and must be given consideration in any future study on re-refining.

## Environmental impact

There is no doubt that the production, storage, transportation, processing and distribution of hydrocarbons imply a degree of risk and environmental impact. While governments and industry do try to reduce such impacts to the lowest level possible through the use of technological solutions and improvements in processes, nevertheless, some activities have more of an impact than others.

The use of lubricants, however, and the disposal of used lubricants and used oil currently represents the largest amount of liquid, non-aqueous hazardous waste in the world. Currently, the majority of used oil comes from the use of lubricants in the transportation sector, where 56 per cent of lubricants are used. This is followed by the industrial sector where 31 per cent of lubricants are used. Only ten per cent of lubricants are used in processing.

Although they are slightly biodegradable, their disposal and their release into the environment is very dangerous to the natural world. As they deteriorate, they carry great risks to the environment and to the health of people, especially with a spike in the level of pollutants coming from the deterioration of increasing levels of additives used in automotive gasoline and diesel engine oils. The deterioration is compounded by the fact that dirt, metal scrapings from machines or engine parts, water, polyaromatic hydrocarbons and chemicals all can get into lubricating oils, thereby not just reducing performance, but rendering them more toxic and carcinogenic.

Therefore, if used oils are disposed of into landfills, they can slowly leach into the land and underground water resources, which can then cause additional extensive damage by getting into rivers, lakes or coastal regions. They could also impair sewage treatment plants. Scientific sources confirm that one litre of oil can contaminate one million litres of water, which is why many suggest that the use of landfills for the disposal of used oil must be avoided at all costs.

## Collection and management

One way to respond to such challenges is through the collection and management of used lubricating oil, which implies an effective collection system that ensures low costs while also being environmentally sound. However, this is probably the most difficult step in the entire process of salvaging resources (whether for energy recovery, re-refining or disposal). Additionally, because of the many points of generation, both large and small,

# Lubricant quality and drain periods

Lubricating oils must meet certain standards and certified specifications, especially for engine oils. The US Society of Automotive Engineers was the first to classify lubricating oils according to viscosity. However, the more famous specifications now are those of the American Petroleum Institute (API) and their counterpart the European Automobile Manufacturers Association (ACEA), in addition to the original equipment manufacturers (OEM) in some cases.

In the API system, base oils are divided into five categories (Group I to V) according to constituents, performance level, and viscosity:

- Group I are traditional lubricants (lubes) prepared by solvent extraction processes.
- Group II base oils have a higher viscosity index and are manufactured by hydrotreating and hydrocracking, and either solvent or catalytic de-waxing.
- Group III base oils have a higher viscosity index. They are more refined through more severe hydrotreatment in order to yield purer base oils.
- Group IV are synthetic base oils which are suitable for more severe temperature applications and extreme cold conditions. They are synthesised from the products of naphtha or condensate steam cracking in petrochemical plants.
- Group V includes base oils produced from silicone polymers, phosphate ester, polyalkylene glycol, polyolester, and oils made from biomass sources. They are more applicable to higher temperatures and will provide superior detergency compared with Group IV synthetic base oils.

While Group I lubricating oils are still produced to a large extent around the world, it is clear that this is changing. Group II are now much more favoured in automotive oils and many producers have plans to phase Group I out. However, higher synthetic oils are not increasing their share as fast. In spite of their advantages in protecting engines and improving fuel efficiency, they are judged by consumers to be very expensive.

In the early days of lubricating oils, mineral oils were simple and contained no additives. Therefore, they required frequent changing as contamination and deterioration were faster. Engine oils were changed after only 800 kilometres travelled. However, with advancements in production processes and the availability of chemical additives to improve performance, drain intervals became longer in developed countries in Europe and North America. Developing regions are now catching up as outdated motor vehicles and machinery are replaced by products that require smaller amounts of better-performing lubricants.

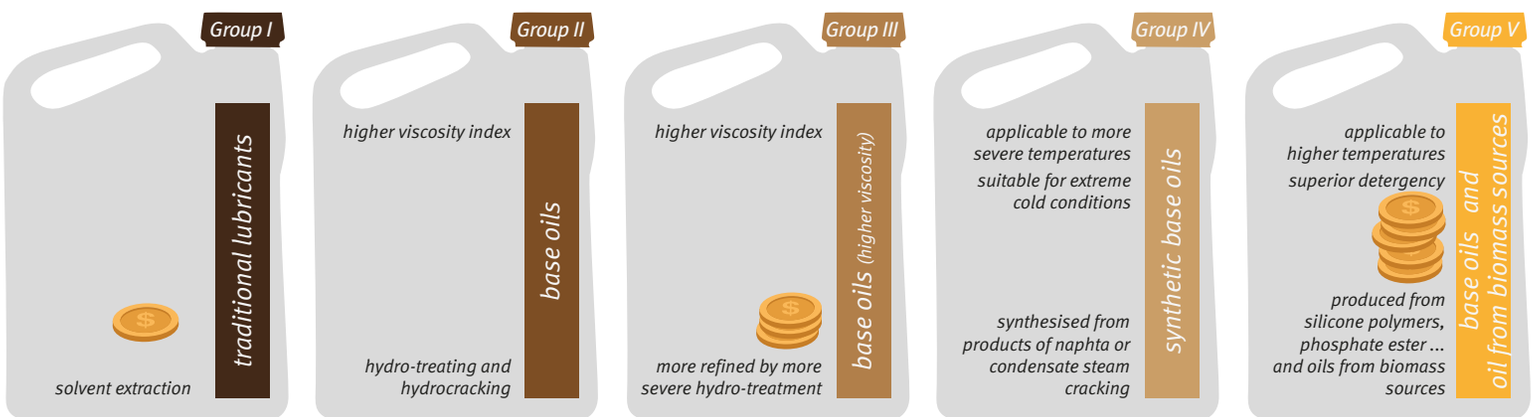
In the heavy duty diesel engine category, oil drain intervals remain around 40,000 km though it is possible to double this mileage for normally running vehicles. However, for the same vehicles running in more severe and harsher conditions, an oil change every 24,000 km is in order.

In the passenger car field, the majority of automakers today call for oil changes at either 12,000 or 16,000 km. This is in contrast to the US where the general practice is changing oil at an outdated 4,800-km target. When synthetic oils are used, the change interval can extend from 12,000 km to 40,000 km, depending on the type of synthetic oil used.

It is clear from the evolution of lubricating oil specifications and consumption trends that the used oil re-refining industry has to follow suit in order to be viable and able to compete. Technological advances in the last 15 years have shown that the re-refining industry has reached a stage where it can produce re-refined base stocks on par with virgin base stocks by following the hydrotreating route.

While consumer awareness of the quality of re-refined lubricants is spreading slowly, the industry still suffers from the stigma that its products are recycled and may be sub-standard and thus have to be sold at a discount.

The trend to extend oil drain periods will force the re-refining industry to produce base stocks that are compatible with higher specifications, though the trend will reduce the availability of used oil in the long run.




# Processing lubricants, re-refining oil

Re-refining is defined as the chemical and physical process that extracts the lubricating base stock from used lubricants, and in which water, fuels, additive remnants and sludge are separated from the base stock.

Base oil is the name given to lubricant-grade oils which are produced in the modern industry through a complex sequence of steps in a refinery where vacuum distillation, solvent deasphalting, solvent extraction, dewaxing and hydrotreating are all employed to obtain base oils ready for blending into finished lubricants. Thus, since base oils are not actually destroyed by use but get contaminated, the question of re-refining them may be considered more of a 'cleaning' process.

One of the most important initial steps in the re-refining process is testing collected used oils to ensure quality. Since used lubricating oils come from a wide variety of sources, they may contain chemical or physical contaminants that are quite hazardous, so initial testing of gathered oils is essential. The quality of the used oils gathered may also depend on different regulations around the world.

Generally, the re-refining process involves other steps such as: filtration and the settling of collected oils, removal of water and light hydrocarbons, removal of gasoil via feeding through a vacuum column, rejection of heavy materials and contaminants through vacuum distillation or wiped film evaporation (or both), and, finally, treating remaining oil with solvent or hydrogen to get base stocks close to virgin oils.

There are three major categories of processes to treat used lubricating oils: treatment with sulphuric acid and clay; a distillation process followed by activated clay treatment and treatment by solvent extraction to reject heavy residues, metals and other contaminants. The second and the third options can be followed by the hydrotreatment of the product to improve quality even further.

The first two options are not currently in favour because of the environmental problems associated with acid and clay sludge. They are, in any case, used for small capacity only. Therefore, the application of solvent extraction and hydrotreatment are the preferred options. Some examples of solvent extraction are the Avista process used in the US, Saudi Arabia and Denmark, and the Dollbergen process in Germany. Examples of hydrotreatment include the Revivoil process used in Italy, Spain, Poland and Indonesia, and the KTI process used in the US, Greece, Germany and Tunisia.

It should be mentioned here that industrial oils, such as those used in power stations, compressor stations and marine installations, may be treated on site by fixed or mobile treating units which rely on a centrifuge to separate water and sludge, which then circulates the clean oil back to the system.

The selection of environmentally sound technology for the re-refining of used oil is not a straightforward task. As far back as 1995, the Basel Convention set technical guidelines for such activities, determining or setting parameters for feedstock quality, as well as for identification of the nature of any contaminants it may contain, stipulating the desired quality and yield of base oil, as well as the disposal methods to be considered for any hazardous waste.

that may impact the method of utilization, it is also a logistical problem that requires careful study and consideration.

One simple approach is to first provide convenient collection points for large volumes of used oil generated by activities at airports, and by the military, truck fleets, garages, taxi company service stations, etc. Collection points are then needed at smaller locations such as local automobile service stations, small lube change shops and so on.

Additionally, all this should be regulated by the government and local municipalities, in coordination with the industry. Associations can be formed to decide on collection costs or whether subsidies are needed to ensure sound operations.

However, when there is no government involvement, it becomes the used oil collector's business to agree with the used oil generator's on costs and logistics. In the United Arab Emirates, for example, used oil collectors pay generators of used oils for the right to dispose of their used oils. This was also the case in the US before the collapse of oil prices in 2014. Today collectors there charge the generators of used oils.

For any approach to the collection, management and conservation of resources, information and data are needed. Specifically, data regarding the overall sale and distribution of lubricants in a country or a region should be made available to those directly involved in disposing of used oils, as well as to environmental authorities, before a given re-refining facility or fuel processing plant location is chosen. Otherwise, disposal of used oils will become a haphazard and potentially environmentally damaging activity.

## Conclusions

The problem of used oils is now an international issue and governments must do their best to contend with it. Even the United Nations Environmental Program (UNEP) and the Basel Convention on waste disposal are active in developing programmes to utilize and dispose of used oil.

As the world continues to develop economically, with associated population growth and urbanization, it is

more likely that environmental laws and regulations will need to be tightened further, especially in countries where these are still lax. The question of waste disposal in general, and used oil in particular, will thus get more and more attention, as the objective of conserving natural resources and preventing the dumping of used oil becomes more critical.

There is no doubt about the environmental impact of disposing used oil into the environment even in well-designed landfills. Small quantities of used oils in water supplies, rivers, lakes and the sea can cause tremendous damage. Carcinogenic pollutants in used oil are, beyond a doubt, a risk to human health.

The debate around re-refining used oil or burning it in specialized industries is not going to be settled soon. Countries have special circumstances that must be taken into consideration. The most important thing is to ensure high collection rates of used oils and the burning of them for energy recovery until there is sufficient volume to support a re-refining plant. Utmost effort should be made to ensure the optimization of drain periods and to follow instructions from manufacturers.

While the economics of re-refining and even burning for energy recovery are very important, they should not be the only solutions to used oil disposal. Governments should support the industry through the imposition of surcharges on lubricant use (polluter pays principle) or by providing direct subsidies to collectors, re-refiners or fuel processors.

In Arab countries, there is a need for more government intervention and regulations to ensure the proper collection and disposal of used oil and to hold licensed companies to well-established practises that take into consideration the rights and interests of all stakeholders.

It is important to form a trade body of lubricant producers, blenders, marketers, collectors, re-refiners and used oil fuel consumers to hold discussions with governments and their respective ministries. Such associations in developed countries have been instrumental in improving the overall management of used oil.

# The Arab lubricant industry

The base oil refining industry in Arab countries may have started in Egypt in the late 1930s or early 1940s followed by Iraq in 1957. Expansion to date has been very significant not only because it added capacity but because of the quality shift from Group I base oils to Groups II and III. With the passage of time, this will improve the quality of finished lubricants. It is necessary to make consumers aware of the new upgraded quality through education and a pricing policy aimed at avoiding early oil changes to reduce used oil quantities and hazards at source. This is especially important because the region is in a low oil drain interval category of only around 2,000 to 3,000 km, though this behaviour is slowly changing as a result of following car manufacturers' instructions.

By the end of 2016, the base oil production capacity in Arab countries was around 3.128 million tons with almost two-thirds of this in Saudi Arabia, the United Arab Emirates (UAE) and Bahrain. Furthermore, those countries have better quality base oils.

Consumption of lubricants is, however, estimated to be at about 1.7m t a year, which is almost half of the production capacity. This will open opportunities for trade among Arab countries and export to international markets, especially for high-quality products. It is much more difficult to estimate re-refining capacity in Arab countries because of a lack of information in a non-regulated industry and the reluctance of re-refiners to provide information.

However, there are reports suggesting that re-refined used oil is gaining ground in the Middle East, although it still suffers from image and quality issues. There are operators which strictly undergo filtration to remove insolubles and export the products to less demanding markets. Uncontrolled burning is also reported, which may produce hazardous emissions in the hot Middle East climate.

Some sources report the existence of five plants in Saudi Arabia which have a total capacity of 100,000 t/yr, but it could be higher. The same source reported that UAE's re-refining capacity is 200,000 to 250,000 t/yr, which is much higher than domestically generated used oil.

According to the best available information, total re-refining capacity is estimated to be over 400,000 t/yr. In any case, the potential new re-refining capacity from collectable used oil could be close to 900,000 t/yr. As the quality of virgin base oils in Arab producing countries moves forward to groups II and III, new re-refining projects must be top quality as well.

Major lubricant manufacturers in Arab countries complain about the state of the re-refining industry, especially because of the growing issue of counterfeiting. The writer met with some major manufacturers who refuse to have anything to do with re-refining because of the risk that its image may affect their own products. This is in contrast to what is happening in some developed countries, where governments give priority to re-refined oil in their facilities and where all lubricant manufacturers share in supporting the collection and proper utilization of used oil.

There is a long way to go for the re-refining industry in Arab countries, both horizontally and vertically. With regard to horizontal growth, many countries have neither plans to regenerate used oil nor possess information on its use or abuse.

Some Arab countries' consumption is low and does not support viable modern re-refining plants. Collected oil could be exported to a plant nearby, in a country where re-refining capacity is established or it could be delivered to a legitimate fuel user. In this way, investment would be optimized, resource conservation maintained and, above all, the environment protected.

# Call for nominations for OPEC Journalism and Research Awards

***OPEC has issued a call for nominations for each of its two industry awards: the OPEC Award for Journalism and the OPEC Award for Research.***

The two Awards honour distinguished individuals who have made outstanding contributions to the petroleum industry and oil-related issues, particularly in enhancing cooperation between oil producers and consumers.

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

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

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

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

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

Both Awards will be presented by the President of the OPEC Conference on the occasion of the 7th OPEC International Seminar, scheduled to take place at the Imperial Hofburg Palace in Vienna, Austria, on June 20–21, 2018.

## Previous Award recipients

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

The 2nd OPEC Award for Journalism was presented to Bloomberg's OPEC news team at the 5th OPEC International Seminar in 2012.

The most recent winner of the OPEC Award for Journalism was Margaret McQuaile, a long-time reporter for Platts. She received her Award at the 6th OPEC International Seminar in Vienna in June 2015, in recognition of the detailed reporting, economic understanding and political acumen that has long characterized her work.

The inaugural OPEC Award for Research was first presented in 2004 at the 2nd OPEC International Seminar held in Vienna in September of that year. It was given to the late Professor Robert Mabro, Emeritus Fellow of St Anthony's College and a Fellow of St Catherine's College, both at Oxford University, United Kingdom. Professor Mabro was a former Director of the Oxford Institute for Energy Studies and became Honorary President of the Institute in 2006. He passed away in 2016 at the age of 81.

The second OPEC Award for Research was presented at the 3rd OPEC International Seminar in Vienna in September 2006. It was given to the economist, the late Professor Peter Odell, then Professor Emeritus of International Energy Studies at Erasmus University in Rotterdam, the Netherlands. He passed away in 2016 at the age of 85.

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

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

The most recent recipient of the OPEC Award for Research was global energy expert, Dr Vaclav Smil, Distinguished Professor Emeritus at the University of Manitoba in Canada. He received his Award at the 6th OPEC International Seminar in Vienna, Austria, in June 2015.

## Criteria for excellence

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

The selection process for the Awards is entrusted to two separate panels of experts, whose knowledge and experience enable them to make an insightful judgment on the achievements of the nominees.

The deadline for nominations for both the 2018 OPEC Award for Journalism and the 2018 OPEC Award for Research is September 5, 2017.

Additional information about the two Awards, as well as application forms and instructions for submitting nominations, are available on the OPEC Website at:

www.opec.org

# Saudi Arabia and Russia: A new era of cooperation


*Russian President, Vladimir Putin, shakes hands with Saudi Arabia's HRH (then) Deputy Crown Prince and Minister of Defence, Mohammed bin Salman, during a meeting at the Kremlin in Moscow, Russia.*

**2017** may well be characterized by posterity as the 'great blossoming' of cooperation between the Kingdom of Saudi Arabia and the Russian Federation, heralding a golden age for the bilateral relations of the world's two leading oil-producing countries.

Central to this new dawn for their relationship is a shared commitment to re-introduce stability into the oil market which has resulted in historic levels of cooperation between OPEC and non-OPEC countries. This endeavour culminated in the momentous 'Declaration of Cooperation,' in December 2016 which committed OPEC Member Countries and 11 non-OPEC oil producing countries to a sizeable adjustment in crude oil production in support of much needed market stability. This adjustment was extended by an additional nine months in May of this year. However cooperation between Saudi Arabia and Russia has intensified on a multitude of other fronts.

Attesting to the positive relations between the two countries, His Royal Highness (HRH) then Deputy Crown Prince and Minister of Defence of Saudi Arabia, Mohammed bin Salman, told Russian President, Vladimir Putin, in a visit to Moscow at the end of May, that, "relations between Saudi Arabia and Russia are going though one of their best moments ever."

Subsequent to his visit to Moscow, HRH was appointed Crown Prince to the Kingdom of Saudi Arabia.

The impetus for the further improvement of relations

was generated on the margins of the G20 summit in Hangzhou, China, in September 2016. Following a meeting between HRH and President Putin, the seeds for a strategic partnership in the field of energy were sown, with significant ramifications for OPEC.

signing of a memorandum of understanding between the Public Investment Fund of Saudi Arabia and the Russian Direct Investment Fund. This will explore the potential of joining a consortium of investors in a Moscow real estate project. The Russian Fund stated that both parties were


*Russian President, Vladimir Putin, meets with Saudi Arabia's (then) Deputy Crown Prince and Minister of Defence, Mohammed bin Salman, at the Kremlin in Moscow, Russia.*

Since then, the relationship has gone from strength to strength, the apex being the visit by HRH to Moscow in May. Closer ties are seen as having the potential to spur increased investment and promote cooperation between the two on a host of potential energy projects in Russia, Saudi Arabia and throughout the globe.

The Kingdom's Minister of Energy, Industry and Mineral Resources, Khalid A Al-Falih was also part of the delegation to Russia and he used the opportunity to speak with his Russian counterpart, Minister of Energy, Alexander Novak, about technological cooperation.

However discussions on future cooperation were not solely confined to the realm of energy. "We support political contacts, contacts between the defence ministries. We work together on sorting out difficult situations, including in Syria," President Putin said after the meeting. This was corroborated by HRH, "we have a lot of common ground. As far as our disagreements are concerned, we have a clear mechanism to overcome them. We are moving forward quickly in a positive way."

One outcome of the meeting in Moscow was the

considering the potential of further projects, including in retail, real estate, alternative projects, transportation and logistics infrastructure.

Russian oil service companies have also shown a growing interest in Saudi Arabia. The Executive Chairman of Rosneft, Russia's largest oil producer met with Minister Al-Falih as part of the visit. In a statement, the Russian major said discussions included exploring possible "cooperation between Rosneft and Saudi Aramco in various spheres of activities."

Further manifestations of the good relations were seen during the St Petersburg International Economic Forum, which Minister Al-Falih attended *(see story on pp38)*. The Russian Minister organized a visit for Al-Falih to Yamal, a district in north-western Siberia. Saudi Arabia is considering the possibility of participating in Russia's Arctic LNG project.

The trip to the Russian Arctic field was a reciprocation of a visit by Minister Novak to Aramco's facilities in the Empty Quarter desert last October. Novak had joked, "last year, Minister Al-Falih took us to a desert; we want to show him an ice desert."

# Equatorial Guinea's Fortuna FLNG a step closer to becoming Africa's first deep-water liquefaction facility

A significant milestone will be passed in August, leading to the anticipated start-up of the Fortuna floating liquefied natural gas (FLNG) export terminal in Equatorial Guinea by 2020. This follows an announcement by the Minister of Mines, Industry and Energy, Gabriel Mbaga Obiang Lima, that Royal Dutch Shell and oil traders Gunvor and Vitol had been shortlisted for an off-take agreement for the Fortuna FLNG.


*LNG demand has accelerated in Afria in recent years.*

Fortuna FLNG is on course to become Africa's first deep-water liquefaction facility. The location is advantageous as it combines the presence of world-class reservoirs, dry pure-methane gas and benign metocean conditions. Production capacity is expected to be 2.2 million tonnes per year.

Fortuna sits within the Block R licence, offshore Equatorial Guinea, which is located in the south-eastern part of the prolific Niger Delta complex.

In November 2016, the British oil and gas explorer, Ophir Energy, signed a Shareholders Agreement with OneLNG, a joint venture between Golar LNG Limited and Schlumberger, to establish a Joint Operating Company which will develop, finance and operate the Fortuna project, utilizing Golar's FLNG technology.

In May, Ophir Energy signed an umbrella agreement with three other parties, namely, the Government of Equatorial Guinea, state-owned GEPetrol and OneLNG, outlining the legal and fiscal parameters for Fortuna LNG, thereby paving the way for the Equatorial Guinean offshore production project to be on course for a final investment decision (FID) this summer.

GEPetrol's participation rights as partners in 20 per cent of the upstream project were reconfirmed by the agreement, as well as the right of the Government of Equatorial Guinea or a state-owned company to own up to 30 per cent of the FLNG vessel.

## Additional FLNG terminals

Minister Obiang Lima indicated at an African oil and gas conference that there was interest in seeing another two FLNG terminals added by the end of the year. LNG demand has accelerated in recent years in Africa.

OPEC's newest member has also become party to binding agreements with OneLNG SA to explore the liquefaction and commercialization of natural gas in offshore Blocks O and I.

Equatorial Guinea, which is Sub-Sharan Africa's third-largest oil producing nation, has seen a lot of recent activity with regard to the granting of licenses for onshore and offshore blocks. The country recently signed a production-sharing contract for offshore block EG-11 with US oil major ExxonMobil.

ExxonMobil is already active in Equatorial Guinea, operating the Zafiro field, which is the country's largest oil producing field.

Minister Obiang Lima indicated that the country has the ambitious target of increasing oil output to 300,000 b/d by 2020.

# New refinery to contribute to IR Iran becoming self-sufficient in gasoline

President, Hassan Rouhani, officially inaugurated the first phase of IR Iran's Bandar Abbas Gas Condensate Refinery in May, which is intended to help the country become self-sufficient in the production of gasoline. The first phase of the refinery will see the production of 120,000 b/d.

Currently, it is estimated that Iranians consume about 60 million litres (15.85m gallons) of gasoline daily on average. The OPEC Member Country already produces approximately 50m l (13.2m gal) and imports about 11m l (3m gal).

## Phase 1

In Phase 1, the facility will add 12m l/d, or 75,000 b/d, of Euro-4 gasoline along with 28,000 b/d of gas oil, 6,300 b/d of kerosene and 8,200 b/d of liquefied petroleum gas production, according to the country's official *Shana* news website.

The refinery is located in the port city of Bandar Abbas, which is 750 miles (1,205 km) south of Tehran.

At full operation, the refinery will then be capable of producing 36m l (9.5m gal) of gasoline per day after completion in 2018. *Shana* has reported that the remaining two phases of the facility are scheduled to come on stream in six-month intervals over the next year.

IR Iran has imported between 50,000 and 75,000 b/d of gasoline in recent years and as the remaining phases of the refinery in Bandar Abbas come on stream, the country is expected to become self-sufficient. Condensate feedstock will primarily come from the offshore South Pars gas field, which IR Iran shares with fellow OPEC Member Qatar, where it is known as North Field.

President Rouhani referred to the contribution of the 2015 landmark nuclear deal with world powers for allowing the project to reach its operation stage. The deal capped IR Iran's nuclear activities in return for lifting sanctions. Were it not for the agreement, Rouhani said, "this giant refining unit would never go online."

IR Iran plans to boost production of condensate from its current level of 700,000 daily to 1m b daily over the next two years. The Bandar Abbas Gas Condensate Refinery is one of two projects that will process the increased output. The second is the $2.8bn Siraf condensate refinery park, which will consist of eight condensate refineries, each with a daily capacity of 60,000 b. Construction is at a nascent stage.

IR Iran has grand ambitions for its downstream oil industry. Media reports from earlier in the year asserted that there were 12 refineries in the works, to be added to nine existing ones in the country which produce 1.73m b of oil equivalent.

*IR Iran's President, Hassan Rouhani.*

# Nigerian Senate clears bill to reform oil governance

Nigeria has taken a significant step towards a major overhaul of the oil sector, as the Senate approved the first of four bills which aim at unlocking millions of dollars of investment. The Petroleum Industry Governance Bill (PIGB) is one part of a series of planned reforms which constitute the Petroleum Industry Bill (PIB).


*Nigerian Minister of State for Petroleum Resources, Dr Emmanuel Ibe Kachikwu.*

The objective of the 191-page long PIB is to "create efficient and effective governing institutions with clear and separate roles for the petroleum industry," thereby increasing transparency and accountability. The oil industry is extremely important for Africa's largest economy, providing 70 per cent of government revenue and nearly all of its export earnings.

The specific provisions of the PIGB seek to reform how Nigeria's oil and gas industry is regulated and funded. Under the Bill, the state oil company, the Nigerian National Petroleum Corporation (NNPC), will be divided into three main companies: the Nigerian Petroleum Regulatory Commission (NPRC), which will have responsibility for regulating the sector; the National Petroleum Company (NPC); and the Nigerian Petroleum Assets Management Company (NPAMC).

## Crude oil marketing and refining

The NPAMC will inherit the NNPC's upstream assets and the NPC is likely to take control of crude oil marketing and refining. Furthermore, the bill creates opportunities for private investment by stipulating that no less than ten per cent of shares of the NPC will be divested within five years of its creation, rising to 30 per cent within a decade.

The NPRC will oversee compliance with laws pertaining to the petroleum industry, which includes the maintenance of environmental standards and the evaluation of national reserves. In addition, the regulatory body will be empowered to grant, amend, renew, extend or revoke any license or lease required for petroleum exploration. In a previous version of the bill, such powers lay with the Petroleum Minister, however transferring responsibility to the Commission was justified as ensuring the separation of duties and providing for checks and balances.

Procedurally, if the governance bill secures passage through parliament's lower chamber, the House of Representatives, it would require presidential approval to become law. Parliament has still to consider the three other components of the main energy bill, namely, the Fiscal Regime Bill, the Upstream and Midstream Administration Bill and the Petroleum Revenue Bill. These bills will address critical issues such as the fiscal terms of the NNPC. Senate President Bukola Saraki said lawmakers were committed to ensuring all of the bills are passed before the end of 2017.

The passage of the Petroleum Governance Bill by the Senate was welcomed by industry analysts. Wunmi Iledare, Director of the Emerald Energy Institute, University of Port Harcourt, said "the passage of the governance bill on its own is a welcome development."

Nigerian Minister of State for Petroleum Resources, Dr Emmanuel Ibe Kachikwu, was upbeat about the prospects of the PIB, saying that it should pass both the Assembly and the Senate this summer.

# Advances in sulphide separation techniques spur sour gas development in UAE

These are interesting times for sour gas expansion in UAE. The state oil company, Abu Dhabi National Oil Company (ADNOC), is weighing up another large gas project in the North West Area, which would consist of developing the Hail and Ghasha, Delma, Nasr and Shuwaihat "ultra-sour" gas fields.

Lying in relatively shallow water, south-west of Abu Dhabi city, analysts have estimated that the sour gas prospect contains about 5 trillion cubic feet of gas and predict it could produce 1 billion cu ft/d. This would be sufficient to meet 18 per cent of UAE's current demand, thereby providing gas and water to 400,000 homes.

Genesis Oil and Gas, a division of France's Technip, delivered the North-West Area design concept and it recommends the construction of a number of artificial islands, mirroring those pioneered for Abu Dhabi's offshore Zadaco oil project.

## Undeveloped gas reservoirs

Abdul Munim Saif Al Kindy, ADNOC's Director of Upstream, explained the rationale behind considering the project, "tapping into undeveloped gas reservoirs is part of ADNOC's focused strategy to drive a more sustainable and economic gas supply."

The previous success of Abu Dhabi's giant Shah Gas Development may well have a positive influence on the chances of the North-West Area getting the go ahead. ADNOC jointly owns 60 per cent of Al Hosn Gas, with its US partner, Occidental Petroleum, (Oxy), owning the rest and this entity successfully delivered the Shah project last year on time and on budget.

Progress has already been made on Phase 2 of the Shah sour gas development, which is intended to boost processing capacity by 50 per cent in the coming years. Currently, Shah produces a total of 1bn cu ft/d, 500 million cu ft/d of which is delivered to UAE's gas grid. In addition, the field produces 33,000 b/d of petroleum condensate and 4.4 million tonnes per day of natural gas liquids.

Front-end engineering design (Feed) work on the expansion of the project is due to be completed this year and will be followed by the launch of the engineering, procurement and construction tender in 2018.

Abu Dhabi, the largest emirate in the UAE, has seen demand for natural gas surge in recent years, largely as a result of power plant and industrial expansions. Gas demand has steadily risen at around six per cent per year, requiring increasing amounts of imports.

To match this growing demand, Abu Dhabi is prioritizing gas development, a situation facilitated by advances in techniques for separating sulphur. The gas of the Shah field, as is the case in the fields in the North-West Area proposed for development, has extreme "sourness." This means it contains very high levels of hydrogen sulphide and carbon dioxide. It is only with the recent evolution of techniques that partners have been able to safely and profitably separate the sulphide. Consequently, Shah's production of 10,000 t/d of pure sulphur has propelled Abu Dhabi to near the top of the world's league table of sulphur producers.

Suhail Mohamed Al-Mazrouei, UAE's Minister of Energy, told the 25th Gas Processors Associaition GCC Chapter conference, that gas would continue to be critical for the country as a source of feedstock of power generation and industrial use.

*Gas field in the UAE.*

*A Royal Visit:*

# The Lamido of the Adamawa Emirate

*His Royal Highness, **Dr Muhammadu Barkindo Aliyu Musdafa**, of the Adamawa Emirate in Nigeria, and an accompanying delegate visited the Secretary General of OPEC and some staff members of the OPEC Secretariat. **Hind Zaher** provides this summary account of the royal visit.*


*Dr Muhammadu Barkindo Aliyu Musdafa (r), of the Adamawa Emirate in Nigeria, during his visit at the OPEC Secretariat, with Mohammad Sanusi Barkindo, OPEC's Secretary General.*

In office for less than a year, Mohammad Sanusi Barkindo, OPEC's Secretary General, has received numerous dignitaries and leaders, each offering their words of welcome and expressions of support. In May of this year, the Secretary General received an especially august visitor: the traditional ruler (or *'Lamido'*) of Nigeria's Adamawa Emirate, Dr Muhammadu Barkindo Aliyu Musdafa. The Lamido not only hails from the Secretary General's own native Nigeria but also from the very same birthplace.

The Secretariat was privileged to receive the Lamido of Adamawa. After a warm welcome by the Secretary General, the OPEC Secretariat's Public Relations and Information Department delivered a presentation to him about OPEC and its work, followed by a screening of a short video about OPEC titled, *'Instrument of Change'*. A Q-&-A session was held afterwards, which was then followed by a guided tour of some of the OPEC Secretariat's facilities, including the main conference room.

During his visit, the Lamido of Adamawa shared stories about his impressive life as a traditional leader in Nigeria. He also described the history of the Adamawa Emirate and recounted some of the rich history of the State of Adamawa.

Formed in 1991 from part of Gongola State, one of the 36 states which constitute the Federal Republic of Nigeria, Adamawa State, located in north-eastern Nigeria, has four administrative divisions: Adamawa, Ganye, Mubi and Numan. Its capital city is Yola.

The name *'Adamawa'* is derived from the founder of the Emirate, Modibbo Adama bin Ardo Hassana, a regional leader of the Fulani Jihad organized by Usumaanu dan Fodio of Sokoto in 1804. In 1806, he founded the Adamawa Emirate and, in 1841, the city of Yola, where he died in 1848.

Adamawa is one of the largest states of Nigeria, occupying about 36,917 square kilometres. It is bordered by

the states of Borno to the north-west, Gombe to the west and Taraba to the south-west. Its eastern border forms the national eastern border with Cameroon.

There are over 80 ethnic groups in Adamawa State, with 21 local government areas. It is well known for its rich cultural heritage as reflected in its history, traditional dances and craftsmanship, as well as music and dress patterns.

The majority of the people in Adamawa State are farmers. Many of them are also engaged in cattle ranching. In addition, the communities living on the banks of the Rivers Gongola and Benue and their tributaries in the state subsist by fishing and farming.

The state is also well-known for its strong agricultural tradition, with crops such as maize, rice millet, sugar cane, cotton, groundnuts, tea and kola nuts all growing abundantly in the area.

The Lamido currently resides in the old quarters of the city of Yola. In recent years, the new city of Jimeta — located about five kilometres to the north-west — became the administrative and commercial centre of the state.

The Lamido had his own interesting history to share. Born in Yola State, Nigeria, in February 1944, he was the eldest son of Lamido Aliyu Musdafa, a leader who left a cherished legacy and ruled the Adamawa Emirate for nearly six decades. Under his tenure, the Emirate grew in prosperity. His son, Dr Muhammadu Barkindo Aliyu Musdafa, was then *'turbaned'* on March 18, 2010, as the next ruler of the Emirate.

The visiting Lamido explained that he attended Barewa College, Zaria, in Kaduna State, and then Ahmadu Bello University, also in Zaria, where he obtained a Diploma in Law in 1969. Later, he attended North London Polytechnic (1973–75) and St Clements University in the Turks and Caicos Islands (2000–02).

Dr Muhammad Barkindo Aliyu Musdafa's professional experience has also been extensive. He worked with the Nigerian Customs Service, the Nigerian Ports Authority and the National Freight Company. He then became a Commissioner for Works and later a Commissioner for Animal Health after joining the Gongola State civil service. He was also a director of the National Engineering and Technical Company (1991–93), Chairman of Stirling Civil Engineering Nigeria Limited (1991–2003) and then Chairman of the Federal Radio Corporation of Nigeria (2003–05).

Under his leadership, which has been described as modern, the Adamawa Emirate has enjoyed new innovative conveniences and approaches to governance. Ruling the Emirate has meant achieving harmony, respect and prosperity, he explained. According to him, ruling is not about power; it is about being responsible for your people and achieving what is in their best interest.

## Worthy candidates

"Traditional titles are not for sale," he explained. "They are given only to worthy candidates based on recommendations of the Emirate's king makers," he said, quoting an official document. He also reiterated his wish to see the State of Adamawa become the most successful state in the whole country. "My hope is to support the Governor and anyone who wants to see Adamawa [become] the best State in Nigeria."

Dr Muhammadu Barkindo Aliya Mustafa is well-known for his wisdom, charisma and leadership. The prosperity of the Adamawa Emirate is a result of his continuous efforts to support the development of the Emirate and achieve excellence. But such a unique and responsible approach to ruling the Emirate is not a surprise: His own late father, Lamido Dr Aliyu Mustada, was also a man of equity and justice. He ruled the Emirate with fairness and achieved harmony despite its heterogeneous ethnic, religious, educational and social composition.

*Dr Muhammadu Barkindo Aliyu Musdafa (r), with Mohammad Sanusi Barkindo, visiting the OPEC press room.*

It is clear that the son has successfully followed his father's footsteps and succeeded in creating very strong bonds with his community. He has taken admirable initiatives and has made the Emirate more prosperous. He is clearly proud of his region and its people, and his contributions as the ruler of the Emirate have been widely admired.

And when he talks about his home, as he did during his visit to the OPEC Secretariat and the Secretary General's office, he does not talk merely as a leader but as a passionate citizen who admires and cherishes the history of Adamawa and the beauty of his birthplace. The Lamido's descriptions of Adamawa State are so vivid and colourful that they leave those who have the privilege of meeting him with the desire to know more.

# Visitors of the OPEC Secretary General

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

## May 1

**Martínez meets with OPEC Secretary General**
Mohammad Sanusi Barkindo (r), OPEC Secretary General, met with Dr Nelson P Martínez, People's Minister of Petroleum, Venezuela.

## May 2

**Angola's Ambassador visits OPEC Secretary General**
Mohammad Sanusi Barkindo (l), OPEC Secretary General, received Maria de Jesus dos Reis Ferreira, Ambassador of the Republic of Angola in Austria, Croatia, Slovenia and Slovakia.

## May 2

**WPC visit to OPEC Secretariat**
Mohammad Sanusi Barkindo (second l), OPEC Secretary General, received Dr Pierce Riemer (l), Director General, World Petroleum Council (WPC). Pictured here with Ulrike von Lonski (second r), Director of Communications, WPC, and Estévão Pedro (r), Angola's Governor for OPEC, Chairman of the OPEC Board of Governors.

## May 3

**Hess visits OPEC Secretary General**
Mohammad Sanusi Barkindo (l), OPEC Secretary General, received John Barnett Hess, CEO of Hess Corporation.

## May 22

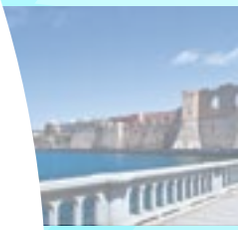
**Flores-Quiroga visits OPEC Secretary General**
Mohammad Sanusi Barkindo (l), OPEC Secretary General, received Dr Aldo Flores-Quiroga, Deputy Secretary of Energy for Hydrocarbons, Mexico.

## May 25

**Ms Khazagaeva visits OPEC Secretary General**
Mohammad Sanusi Barkindo (l), OPEC Secretary General, received Iuliia Khazagaeva, correspondent at Tass News Agency.

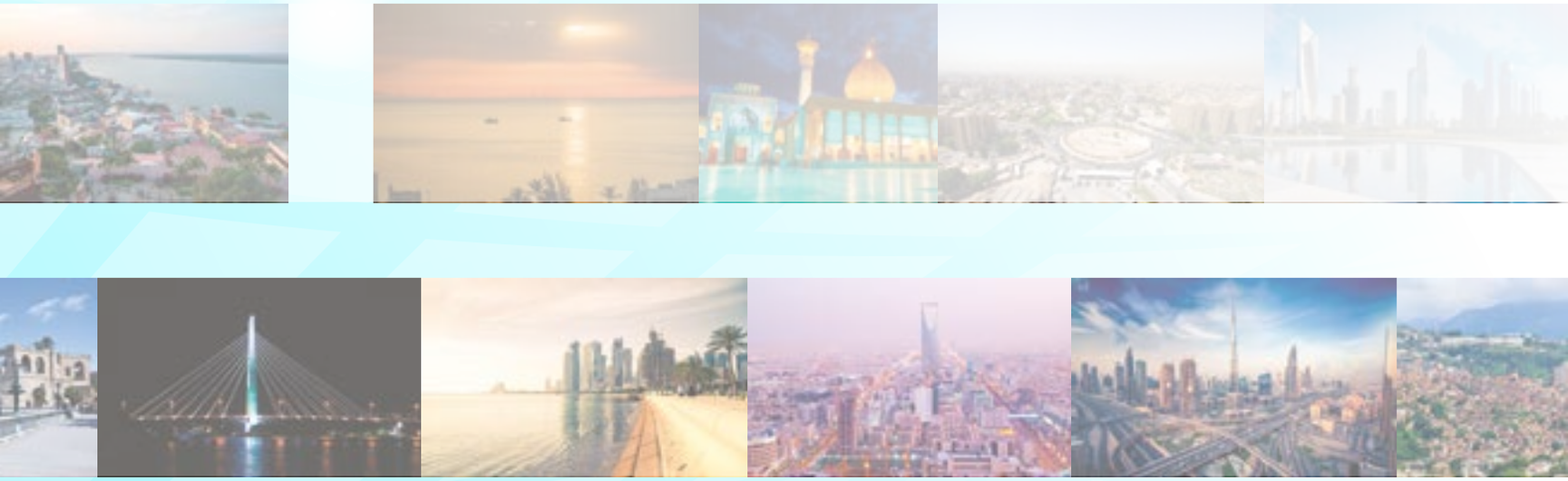
## May 26

**Visit of Nigerian media representatives**
Mohammad Sanusi Barkindo (fourth r), OPEC Secretary General, received a group of journalists from Nigeria.



# OPEC CITIES IN FOCUS

*Pictured above is Angola's capital city, Luanda.*



In the previous 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.

Angola's modern Luanda bay front walk.

Shutterstock

# Luanda:
## Angola's pearl and cultural icon


*São Paulo da Assunção de Loanda, more commonly known as Luanda, is the capital city of the Republic of Angola. The* OPEC Bulletin's ***Ayman Almusallam*** *takes a closer look at the city, its history and key developments in this second instalment of our 'OPEC Cities in Focus' series.*

Luanda, lying on the Atlantic Coast, is one of Angola's most strategic ports, endowing the country with economic and logistical significance. It is also a primary cultural, urban and industrial hub, and thus plays a notable role in the OPEC Member Country.

The population of Luanda is estimated to be more than six million, while its geographical size is around 113 square kilometres. Interestingly, it is deemed the world's third-most populated Portuguese-speaking city and ranks first among Portuguese-speaking capital cities in terms of population size.

The present name of Luanda is derived from Portuguese and the city itself dates back to the 1500s when it was founded by a Portuguese globetrotter named São Paulo da Assumpção de Loanda. Back then, just a handful of settlers resided in the area. But the city took on the Portuguese explorer's name and eventually, in time, was referred to only as Luanda.

In 1576, much of the area in which Luanda is located had been discovered by Portuguese explorer Paulo Dias de Novais, who was greatly fascinated by the area's notable wealth of minerals, particularly silver. Dias de Novais was the grandson of the well-known 15th century explorer and mariner, Bartolomeu Dias, who belonged to a Portuguese royal household. He is known for being the first European to reach the Indian Ocean via the Atlantic Ocean.

The region where Luanda is located then began to acquire importance when colonists erected three strategic fortresses there during the 17th and 18th centuries. The city thereafter experienced a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*The port of Luanda.*

development boom in various domains, accompanied by growing affluence and prosperity.

## Climate & geography

The semi-arid climate of the city is usually somewhere between warm and hot, and tends to be dry. The frequency of rainfall is subject to the Benguela Current, an ocean current that flows northward from Cape Point to Angola's Benguela in the western part of the country. Luanda experiences rainfall mainly during the months of March and April.

The city is divided into two zones: Baixa de Luanda and Cidade Alta. The old city — Baixa de Luanda — is considered to be lower Luanda. It is located on the coast, forming the port of Luanda. The old town consists mainly of old buildings, originating from the colonial era or the pre-colonial era, and narrow streets. However, it enjoys some modern features as well.

Cidade Alta — Upper Luanda — is the new part of the city. It is characterized mainly by massive construction and contemporary buildings.

Near the Angolan capital, there is also Luanda Sul, an independent 'satellite' city where many people who work in Luanda live.


Alamy

*Red facade of an old colonial house in Luanda.*

## History of a city and country

Luanda was initially inhabited by a group of settlers and soldiers in 1576. It is estimated that there were around 500 residents. Since the Portuguese were considerably concerned with safety and aimed to maintain their position, they eventually constructed three vital fortresses. Thus, in 1618, they erected Fortaleza São Pedro da Barra. Subsequently, they built two other forts: Fortaleza de São Miguel in 1634 and Forte de São Francisco do Penedo in 1765.

Fortaleza de São Miguel — or Saint Michael Fortress — remains well preserved and is maintained by the Angolan authorities. The fortress, which has become a distinctive attraction for local and international tourists, is a testament to the rich and extensive history of Angola in general and Luanda in particular.

The city underwent several enlargements and developments during the Portuguese era, which lasted from 1575 to 1975, becoming the colony's most prosperous area. During this time, various notable events took place.

In 1640, Luanda was invaded by the Dutch, an occupation that lasted until 1648. The Portuguese then regained power and recovered the lands they had lost.

Shutterstock

*The National Bank of Angola in Luanda.*

During the era of slavery, Luanda became a prominent marketplace sharing robust trade ties with many merchants, especially the Portuguese colony of Brazil. In fact, the Port of Luanda was largely dominated by Brazilian ships.

It is interesting to note that the Portuguese did not attempt to expand their colony at this time. Moreover, several conflicts took place between Portugal and the Netherlands in Luanda during this period of time. However, the city persisted and remained strong.

The influence of Brazil on Luanda became more evident during the 17th century. However, eventually its influence on Angola began to dissolve, especially after 1822, as a consequence of Brazil's own independence from Portugal. And in the 19th century, Angola experienced remarkable economic growth and solid development across various sectors.

In 1836, slavery was entirely eradicated. This concluded a significant period of growth and progress in Angola. Moreover, Angolan ports were finally permitted to trade with foreign merchants and accommodate international ships.

A few years later, Luanda was able to expand its economy further by exporting a number of commodities such as coffee, copal, cocoa, timber and peanut oil. The country's notable economic progress during this time led Luanda to become one of the most advanced and prosperous colonies in the immense Portuguese empire.

By the end of the 19th century, an artificial aqueduct was

constructed to maintain a regular and reliable supply of water to the inhabitants of Luanda. The scheme was perceived to be a key driver behind substantial growth in the region.

The Republic of Angola finally gained full independence in 1975. It then experienced a civil war from 1975 to 2002. However, as soon as the war ended, Luanda experienced rapid economic growth and major new developments, all as a result of the country's booming oil industry.

In more recent history, Angola has been a major producer and net exporter of crude oil, and was admitted as a full member of the Organization of the Petroleum Exporting Countries (OPEC) in 2007. It thus joined other Member Countries in the Organization's mission to maintain oil market stability and ensure a balanced setting for all stakeholders involved in the industry.

From the beginning, the African country engaged in all efforts undertaken by the Organization to realise its objectives, and thus rapidly became an active and valuable member of OPEC. This was best exemplified when it hosted the 155th (Extraordinary) Meeting of the OPEC Conference in 2009. The Ministerial Conference, which took place on December 22 of that year, was attended by 12 OPEC Member Countries and four other oil-producing states as observers: Kingdom of Bahrain, the Arab Republic of Egypt, the Republic of Indonesia and the Sultanate of Oman.

At that meeting, the OPEC Conference witnessed OPEC and non-OPEC countries make joint efforts to build a sustainable environment to restore oil market equilibrium and reinstate industry stability. They also took a delineated action to guarantee a steady income to producers, a regular supply of crude to consumers and ensure a fair return to investors.

## Reconstruction, expansion and economic development

In recent years, the Angolan capital city has attracted enormous investment from the private and public sectors alike. This has helped finance the reconstruction of the country, after the damage caused by Angola's independence and civil wars.

Since the end of the Angolan civil war in 2002, the country — and the city of Luanda in particular — has been undergoing much reconstruction and partaking in major development programmes. This has included the construction of modern houses, sophisticated and advanced infrastructure, new highways and a contemporary, world-class airport. The stability and safety experienced after the end of the civil war have established Luanda as a promising city with much potential and a bright future.

Social housing in particular now forms a key cornerstone of the housing industry in Luanda. According to a report carried by *Construction Review Online,* Angolan authorities consider this development, in addition to an improving job market, significant factors in ongoing efforts to eliminate poverty in the country.

There have been other notable achievements, too. According to the Open Data for Africa Initiative, a project developed and initiated by the African Development Bank, the literacy rate among Luanda's population reached almost 90 per cent in 2012. Furthermore, 90 per cent of the population as of 2012 has regular access to sanitation, while nearly 85 per cent has access to Luanda's electricity network.


*A monument in Luanda, formerly named Sao Paulo da Assuncao de Loanda.*

## Sport

Finally, sport is an important part of life in the country. In September 2013, Angola hosted the 41st edition of the world's most prominent roller hockey competition for men, the *Roller Hockey World Cup*. The event, which took place in the cities of Luanda and Namibe, attracted 16 different international teams from five confederations.

Some 48 matches were played in total and 408 goals were scored. Spain was crowned as the competition's champion while Argentina, Portugal and Chile came second, third and fourth, respectively.

But the real highlight of the competition was that Angola became the first African host of the *Roller Hockey World Cup* in the history of the championship. That is another first for a nation that has seen some trials and tribulations over the years, but which has grown and developed into one of the most dynamic and high-achieving countries on the African continent.

Angola has become one of Africa's most developed nations. Its wealth, acquired from its natural resources and growing industries, has led to notable progress today, which is enjoyed by its population as a whole — and its pearl, the city of Luanda, in particular.


*In September 2013, Angola hosted the 41st edition of the world's most prominent roller hockey competition for men, the Roller Hockey World Cup.*

# Born to Fly !

*Motivated by his father to fly from a young age,* ***Prince Turki bin Muqrin bin Abdulaziz*** *today chairs the Saudi Air Sports Federation (SASF). But his passion doesn't stop here! He works to promote air sports not only in his country but also in the region.* ***Siham Alawami*** *files this report based on a recent conversation with the Prince.*

As far back as he can remember, Prince Turki bin Muqrin bin Abdulaziz, Chairman of the Saudi Air Sports Federation (SASF), wanted to fly. He recalls fond memories of his childhood and adolescence, and already at an early age, he realized he was born to fly. "I always had an interest in aviation from a young age," he said.

His passion for flying seems to have been inspired and encouraged by his father, who was also a pilot. He says he fearlessly went on his first flying adventure at just ten years of age. "My family has always shared a passion for aviation."

Later in 1991, when he was older and more experienced, his father offered him his first flying experience — where he actually got to fly a plane over London. At the time, he says, he thought to himself: "My dream is finally coming true."

## Achievements

It was an experience he would never forget. "On that first flight, I realized flying was the only thing for me," he says. "So I started by flying helicopters in the UK."

"Later on, I went to study fixed-wing flying and got my licence. I now hold the US Federal Aviation Agency (FAA) licence and I am a licensed helicopter and fixed-wing pilot," he said.

"It was probably one of my greatest achievements." However, he says he stopped flying 'aerobatics' — special flying manoeuvres involving unusual altitudes — growing more cautious when he and his wife began to have children.

But flying remained important for many reasons. "Flying also drove me to live my own life and I have been inspired to achieve all my dreams," he added.

"To learn to fly and get a pilot certificate requires long study, so a good pilot is always learning to advance his skills," he explained.

"Private pilots should comply with safety and security aviation regulations and know the road map of the skies to get ready for take-off without an instructor," he noted.

"I never have had a real emergency," he says. "But as a pilot, I have encountered different situations and technical failures."

He urges others to fly, too. "Enjoy flying — whether it

*Prince Turki bin Muqrin bin Abdulaziz, Chairman of the Saudi Air Sports Federation.*


*Ms Alawami from ICSS next to an aircraft featuring the 'Save the Dream' logo.*

*One of the acts shown at the prestigious air show.*

is a commercial jet or other, it doesn't matter. Flying is flying — and it should be safe and fun," he said.

"After completing my own private pilot certificate, I considered completing the commercial pilot certificate. But I wondered if I was really looking for employment." In the end, he chose to be a private pilot "because I wanted simply to enjoy the experience of flying," he said.

## Challenges faced by the SASF

As chair of the Saudi Air Sports Federation (SASF), the Prince has had to deal with numerous complex challenges both locally and regionally. These have ranged from dealing with the entrenched culture of air sports to logistical challenges and infrastructure issues.

"A few days after taking office as Chairman of the SASF," he said, "my main concern was how to protect aviation in Saudi Arabia and the region, as we lack the information and culture." In fact, poor infrastructure for small planes has been a big problem, in part a consequence of people parking their airplanes outside airports and tending to practice hang-gliding air sports," he said.

"My main concern was to protect the great achievements of the Kingdom of Saudi Arabia," he said. Registering all aircrafts and issuing pilot licenses were thus among his top priorities.

In this context, Prince Turki reviewed the great efforts already being exerted by the SASF to protect and enforce aviation laws and regulations.

"Today we have airports in most parts of Saudi Arabia which host clubs … though we are still in early stages of development," he said. He praised the efforts being made by young Saudi amateurs to promote the sport of recreational flying.

## 'Save the Dream Global Pact for Sport'

Recently, on the sidelines of the '*My King and My Kingdom at the Top*' programme, Prince Turki commented on a recent cooperation agreement signed in Riyadh between the SASF and the '*Save the Dream Global Pact for Sport*', a joint initiative of the International Centre for Sport Security (ICSS) and the Qatar Olympic Committee (QOC).

The idea behind the *'Save the Dream'* initiative is to create a voluntary network of supporters from the business sector, sports and civil society, all committed to promoting the positive values of sport within communities and their respective networks and organizations. This global initiative, which is supported by technology


*Dr Mubarak Suwailem Alsuwailem (l), President Asian Air Sports Federation, and Mohammed Hanzab (r), President of the International Centre for Sport Security (ICSS), signing the cooperation agreement between the SASF and 'Save the Dream', a joint initiative of the International Centre for Sport Security (ICSS) and the Qatar Olympic Committee (QOC), supported by technology partner, Ooredoo.*

partner Ooredoo, is open to the business community and sport organizations willing to work together to promote and protect the core values of sport.

## Security, safety and integrity in sport

Prince Turki expressed his hope that this initiative would enhance the prospects of bilateral cooperation. He also, more generally, voiced his hope that the SASF would benefit from the ICSS's international expertise in the fields of security, safety and integrity in sport in order to promote air sports in his country, stressing the importance of promoting good safety practices in this regard.

In this context, Prince Turki thanked those associated with the *'Save the Dream'* initiative for also taking part in the *'My King and My Kingdom at the Top'* programme, during a recitation of the Pledge of Allegiance to the Custodian of the Two Holy Mosques, King Salman bin Abdul Aziz Al Saud, which took place in Riyadh on January 1, 2017.

That programme is now being launched under the auspices of the SASF and the Asian Air Sports Federation — which was the first sport body to sign the '*Save the Dream Global Pact for Sport*' — as part of Saudi Arabia's efforts to more widely promote youth and sports programmes.

## The growth of air sports

**"Enjoy flying — whether it is a commercial jet or other, it doesn't matter. Flying is flying — and it should be safe and fun."**

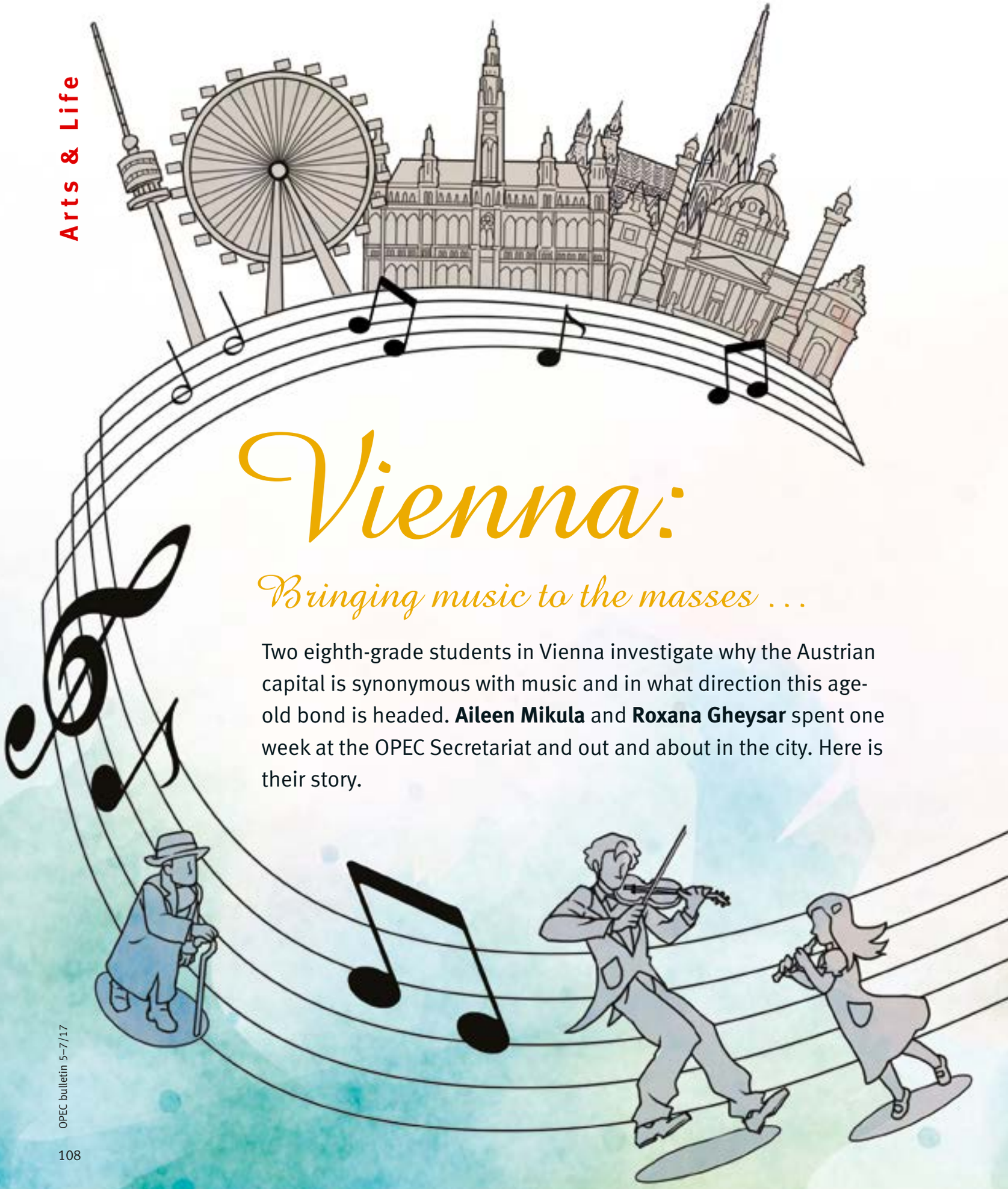
**— Prince Turki**

Given such initiatives and programmes, and the increased promotion of air sports culture, air sports have grown rapidly in Gulf Cooperation Council (GCC) countries in general — and Saudi Arabia in particular. This has created growing demand for airplane parts and repair stations, Prince Turki noted. For the moment, however, the nearest maintenance and repair centre is still in Turkey.

Saudi Arabia currently has 27 airports organized into three different categories: international, regional and domestic. However, as Prince Turki noted, each of these airports faces significant logistical challenges. More effort is thus needed, he said, to expand and improve the country's air facilities and to better share the culture of air sports with others.

"Without spreading a private air sports culture and providing aviation facilities, this sport will not exist," he ruefully noted. In fact, he added, "I dream that one day everybody here in the village and the farm will have their own aircraft." That is certainly a dream worth sharing.

*All images in this feature courtesy SASF.*



# Vienna:

## Bringing music to the masses . . .

Two eighth-grade students in Vienna investigate why the Austrian capital is synonymous with music and in what direction this age-old bond is headed. **Aileen Mikula** and **Roxana Gheysar** spent one week at the OPEC Secretariat and out and about in the city. Here is their story.

When you think of Vienna what comes to your mind? Most people associate Vienna with delicious *Wiener Schnitzel,* or the beautiful and stunning Alps — yet others think about jaw-dropping classical music. Whether Mozart, Beethoven or any other famous composers come to your mind, Vienna is and always will be a centre of classical music.

The music in Vienna is unique and is a trademark created to sell the city's magnificence, says University Professor, Dr Stefan Schmidl, of the Austrian Academy of Sciences, Institute of History of Art and Musicology. "This strong trademark is still active today and people actually believe in it."

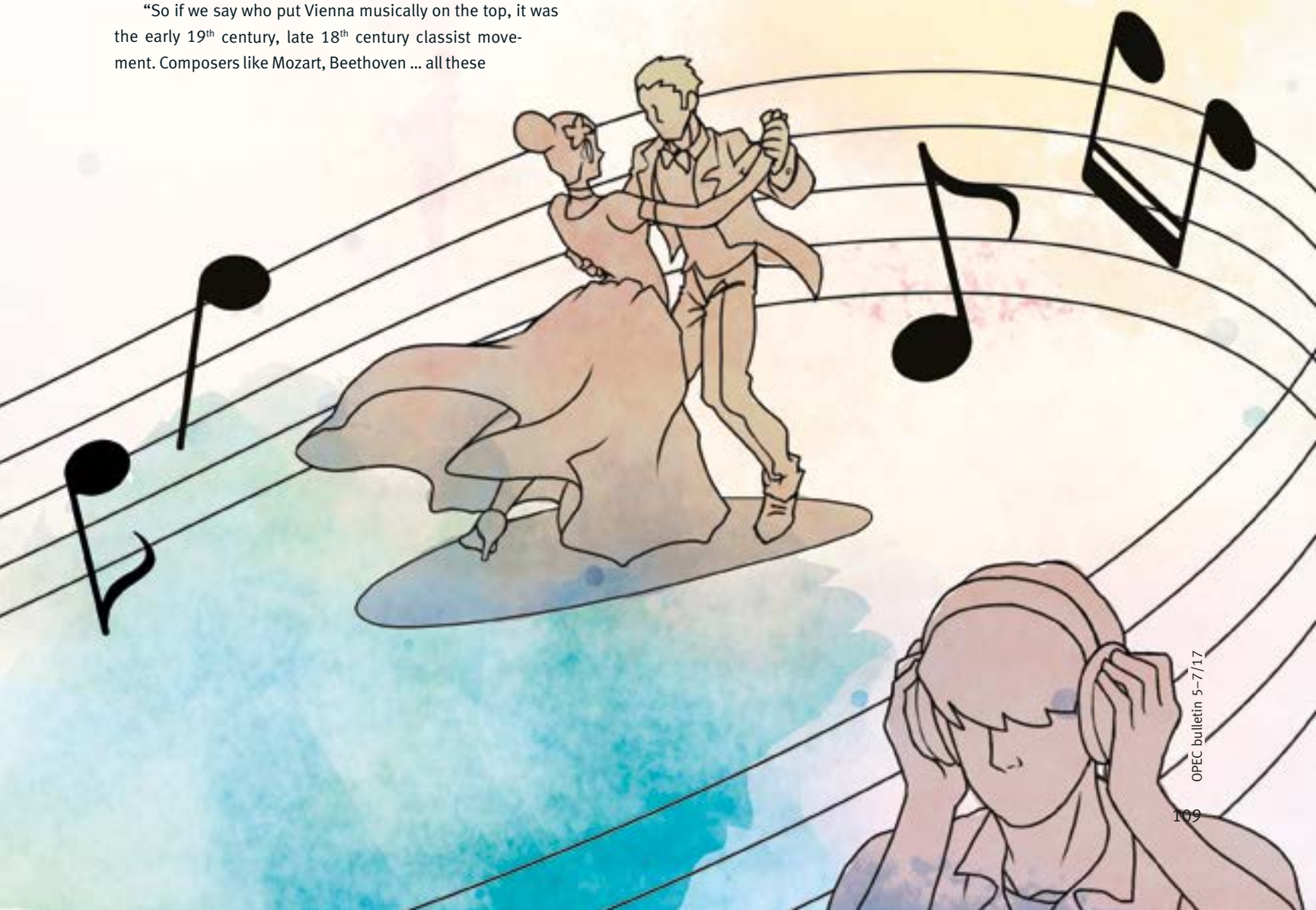
It is a cliché that originates from the late 18th century. Back then, the Habsburg emperors enjoyed listening to music and composed songs themselves in the Hofkapelle. They supported music and with the advent of the bourgeoisie in the 19th century "music exploded", with the Vienna classical movement becoming international.

"So if we say who put Vienna musically on the top, it was the early 19th century, late 18th century classist movement. Composers like Mozart, Beethoven … all these composers from the 19th century and it really became global in the 19th century with Johann Strauss," claims Schmidl.

The only exception to this musical growth took place in the time of Maria Theresia. The Hapsburg Empire was in danger from the Prussian king and invested a large amount of money in the war instead of music, thus courtyard music was very much reduced.

## Changing focus

The focus on music has changed drastically since the baroque era. Back then, it was more on choirs and aristocracy. In the late 18th century and 19th century the bourgeoisie took over and it became a broader phenomenon. Money is important to music, admits Schmidl, but generally there was enough money in Vienna to support its growth and development between the aristocracy and the court.




*The Austrian Academy of Sciences (OeAW) is Austria's central non-university research and science institution.*

Of course, in the 20th century there is the media, he observes. It is a transporter of music and it has multiplied outreach.

According to Schmidl, the internet has also impacted how people consume music. "You can download it, you do not buy the CDs and … you do not have to listen to a whole symphony or a whole album — you tend to select or listen quicker than in earlier times. Definitely it changed."

*L–r: Maureen MacNeill, of the OPEC Bulletin; Roxana Gheysar; Dr Stefan Schmidl, Austrian Academy of Sciences, Institute of History of Art and Musicology; and Aileen Mikula.*

Over the years, concert halls also evolved. Today there are specialized concert halls like the opera house, the concert house or the Musikverein, but, historically, architecture was not devoted to music.

"This is a very recent phenomenon from the 18th or 19th century. Before that, buildings were used for multiple purposes," says Schmidl.

Concert halls really exploded in the late 18th century when music came more to the common people and bridged social classes to some degree.

Schmidl points out: "It is unique that music was used as a discourse medium and was accepted and consumed by all classes of society. I think this changed in the 20th century. We do not have this broad impact on society through music anymore."

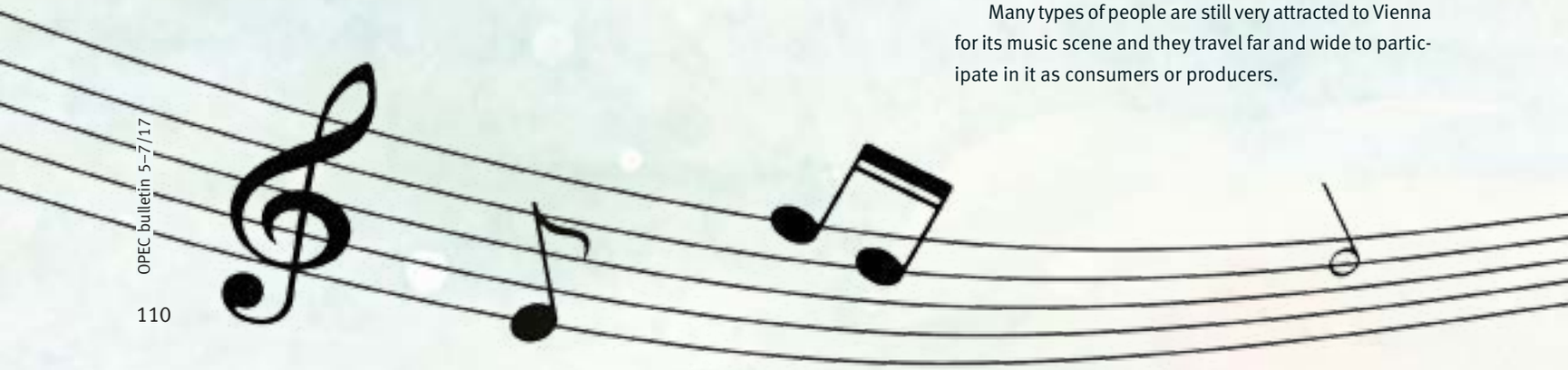
Historically, though, Vienna was definitely a hot spot for many reasons.

"Vienna was and still is very attractive for composers and I think this had to do (then) with the condition of Vienna being the capital of the Habsburg Empire, which was very multiethnic and multilingual. All came together in Vienna from this huge empire, so for a composer it was very attractive."

Schmidl explains: "You had music from all parts of the empire. You could hear Hungarian music, Slovak music, Romanian music and for a composer this was very fruitful. Brahms is an example of this. He could not have had this in Munich or Hamburg or other cities."

In addition, there were all kinds of audiences from every class. And the more types of audiences, the more money, he states.

Many types of people are still very attracted to Vienna for its music scene and they travel far and wide to participate in it as consumers or producers.



*L–r: Dr Stefan Schmidl; Maureen MacNeill; Aileen; and Roxana.*

Music in general brings a lot of people to the city, says Schmidl. "It is a major factor for tourism … I think that classical music is the first or second attraction in terms of tourism."

Being a centre of musical excellence also improves the mental quality of life for locals, he agrees.

## Changing trademark

Vienna's musical identity is starting to move beyond just its trademark style of music, even though it still remains a leader of classical music, according to Schmidl.

He adds the classical trademark is sort of museum-like today. "Classical music is of course very strong here — you have the universities for music and so on — but in everyday life classical music has no place."

As the typical classical concert-goers age, and without these numbers being replaced by young people with the same enthusiasm for classical music, the situation may change very much in 20 or 30 years, Schmidl maintains.

"Of course, you have events like the New Year's concert, which is a global aspect, but in everyday life classical music does not play the role it played in the 19th century."

However, a strong electronic scene has been rising up since the 1980s and other modern forms of music. There is still a strong musical scene in Vienna aside from classical music, he contests.

"I think it is necessary to reformulate this trademark of the music city and broaden it to include electronic or other music, not only concentrate on the Mozart cliché," he asserts.

Schmidl adds that there needs to be tourism strategies with new formulations of this trademark. There is enough money to establish and keep this cliché alive but it will be necessary to find a new formula in the coming years. This has to do more with creativity than politics, so artists should be supported in this endeavour.

## New Year's Concert

The New Year's concert is world famous — seen by billions, according to Schmidl. "And it is the opportunity to sell the trademark of the music city, Vienna. You can not have a better advertisement than the New Year's Concert."


*Interior detail from* The Collection of Historic Musical Instruments *section of the Kunsthistorisches Museum (Museum of Art History), Vienna, Austria.*

The concert evolved over time and did not have the impact that it has today when it started, he says. According to literature, the first New Year's Concert took place during the darkest chapter of Austrian history and that of the Vienna Philharmonic.

It was in the 1930s, in the midst of dictatorship, barbarianism and war, when people feared for their lives and families.

On January 1, 1941, a Philharmonic matinee entitled *'Johann Strauss Concert'* was performed. It was seen in part as an expression of Viennese individuality, taking place as it did in the middle of the war. But is was also misappropriated for national-socialist propaganda.

From 1929 to 1933, Clemens Krauss conducted an annual concert of Strauss compositions at the Salzburg Festival, thus anticipating the format of the future New Year's Concerts. Krauss then conducted the New Year's Concerts until the end of the war and after a small break conducted seven more concerts until 1954.

After Krauss died on May 16, 1954, the orchestra, after much deliberation, decided to entrust concertmaster, Willi Boskovsky, with the artistic direction of the New Year's Concerts.

This turned out to be a stroke of genius, with Boskovsky going on to conduct the concert 25 times — between 1955 and 1979 — making such an enduring impression that his resignation constituted the end of an era. Since 1986, conductors have been rotated annually.

## Education

The idea of Vienna as a classical music capital is more embedded in the minds of people outside the country than inside, contends Schmidl. The trademark is still very attractive for music students from abroad, for example. Most still come to study classical music and an instrument or composing.

There is not very much emphasis placed in music in the public school system, but the music schools and universities dedicated to music are excellent.

Teachers in Vienna are very good and this level of excellence is an economic factor behind why students choose to come here, says Schmidl.

"If you say abroad that you studied in Vienna, you are in a better position job-wise. This is especially true when it comes to Asia."

*Rehearsal of the Simón Bolívar Sympony Orchestra at the Golden Hall of Vienna's Musikverein, venue to the New Year's concert that takes place every year in Vienna.*

The breakdown of students at the Music and Arts University is approximately 30 per cent Asian, 30 per cent from other countries abroad and the rest from Austria, reveals Schmidl.

In terms of comparable countries, Finland is equal to Austria in both music education and consuming music, states the professor. However, Vienna has plenty of musical specialties.

"Vienna is very well known for its string sounds — the Wiener Streicherklang. But the same goes for brass instruments. For conducting, it is not that famous, but you have a great variety of famous conductors being active here. So it is definitely still a place for conductors to come."

## Countryside

There is still a lot of emphasis on music in the countryside and here the city-country schism comes strongly into play, states Schmidl.

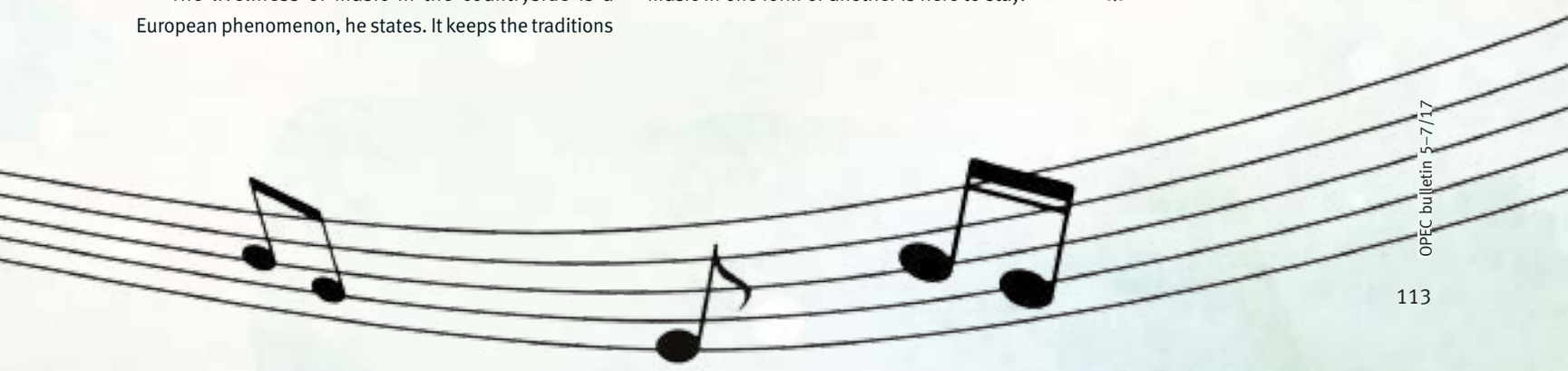
"This contradiction of capital and countryside really broke out in the 1920s and is still there today. People in the countryside use music as an identifying factor," he says.

The liveliness of music in the countryside is a European phenomenon, he states. It keeps the traditions alive, but on the other hand some parties try to use the music to support ideological ideas such as the homeland and blood and soil. "With music you have to be very careful how it is used for identity reasons."

Schmidl says the countryside may, for that reason, feel more threatened by the changing population. They want to keep their music and culture pure "... which is a paradox. Music lives through change and exchange. This is a phantasm of a pure music."

Inside this complex and fascinating mix of past and present, classical and modern, country and city, foreign and local music has always managed to stay at the heart of Vienna and the city's identity. This may evolve in the years to come, but it seems music in one form or another is here to stay.

*Aileen (l) and Roxana in a souvenir shop listening to sounds from a music box.*



# Top composers … at a glance

Austria and Germany are famous for their composers of classical music. From Beethoven to Mozart — there is something for everyone. The following gives a brief profile of some leading lights.

## Ludwig van Beethoven

Composer Ludwig van Beethoven was born on December 17, 1770, in Bonn, Germany. He was an innovator, widening the scope of sonata, symphony, concerto and quartet and combining vocals and instruments in a new way.

At the same time as he was composing these great and immortal works, Beethoven was struggling to come to terms with a shocking and terrible fact, one that he tried desperately to conceal. He was going deaf. Despite this, some of his most important works were composed during the last ten years of his life, when he could not hear.

Sometime between the births of his two younger brothers, Beethoven's father began teaching him music. Beethoven changed music, the sound of music and what composers did. He wrote nine symphonies that jolted music out of itself. Life could never and would never be the same again. The "classical" rationality of structure, harmony, form, melodic development and orchestration stretched into open-ended possibility. He died in 1827 at the age of 56 from a stroke.

## Johann Sebastian Bach

A magnificent baroque-era composer, Johann Sebastian Bach is revered through the ages for his work's musical complexities and stylistic innovations.

He was born in 1685 in Eisenach, Thuringia, Germany. Some of his best-known compositions are the 'Mass in B Minor', the 'Brandenburg Concertos' and 'The Well-Tempered Clavier'.

His father, Johann Ambrosius, worked as the town musician in Eisenach and is said to have taught young Johann to play the violin. At the age of seven, Bach went to school where he received religious instruction and studied Latin and other subjects.

Bach had a beautiful soprano singing voice which helped him land a place at a school in Lüneburg. He was a master at counterpoint: composition based on independent musical lines played together.

With Bach, counterpoint reached its highest point of expression — it is much less prominent in the work of later composers. This style of writing has a unique intellectual and aesthetic appeal, arising from its complexity, structure and detail. Johann died in 1750 due to a stroke.

## Franz Joseph Haydn

Franz Joseph Haydn was born in 1732. Over the course of his 106 symphonies, the Austrian became the principal architect of the classical style of music.

Haydn was among the creators of the fundamental genres of classical music and his influence upon later composers is huge.

Haydn's most celebrated pupil was Ludwig van Beethoven. Haydn was recruited at the age of eight to sing in the choir at St Stephen's Cathedral in Vienna, where he went on to learn to play violin and keyboards.

After he left the choir, he supported himself by teaching and playing violin while studying counterpoint and harmony.

Haydn is remembered as the first great symphonist and the composer who essentially invented the string quartet. The principal engineer of the classical style, Haydn exerted influence on the likes of Mozart. He died in 1809 aged 77.

*Ludwig van Beethoven*

*Johann Sebastian Bach*


*Joseph Haydn*

## Franz Schubert

In 1814, the genius of Franz Schubert (1797–1828) was first made evident in his work Gretchen am Spinnrade, inspired by his reading of Johann Wolfgang von Goethe's (1749–1832) Faust.

His first Mass and his first symphony appeared about this time and showed the influence of Haydn on him. Schubert composed five more of Goethe's works into songs.

By the end of 1814, Schubert was an assistant at his father's school. Between 1820 and 1823 Schubert achieved his musical maturity. Two of his operettas and several of his songs were performed in public; amateur and professional quartets sang his partsongs for male voices.

On November 11, 1828, Schubert began suffering from nausea and headache. Five days later the doctors diagnosed typhoid fever and he died a few days later on November 19.

## Johann Strauss I

Johann Strauss I was an Austrian Romantic composer born in Vienna on March 14, 1804. He was famous for his waltzes and he popularized them alongside Joseph Lanner, thereby setting the foundations for his sons to carry on his musical dynasty.

The piece he is most famous for is the Radetzky March. His mother died of 'creeping fever' when he was seven and when he was 12 his father was discovered drowned, possibly by suicide, in the Danube river.

Strauss was placed as an apprentice to a bookbinder by his guardian, and took lessons in the violin and viola, in addition to fulfilling his apprenticeship.

He eventually joined a string quartet which played Viennese waltzes and rustic German dances and expanded into a small string orchestra in 1824, becoming deputy conductor after it became popular during the Fasching of 1824.

He then formed his own band and began to write music (chiefly dance music). The musical competition between Strauss and Lanner was very productive for the development of the waltz and other dance music in Vienna.

Strauss soon became one of the best-known and well-loved dance composers in Vienna. The conducting reins and management of this Strauss Orchestra would eventually be passed on to the hands of his sons until its disbandment by Eduard Strauss in 1901.

Strauss died in Vienna on September 25, 1849, at the age of 45 from scarlet fever.

## Wolfgang Amadeus Mozart

Wolfgang Amadeus Mozart, born on January 27, 1756, in Salzburg, was an Austrian composer, widely recognized as one of the greatest composers in the history of Western music. He composed more than 600 works, many acknowledged as pinnacles of symphonic, concertante, chamber, operatic, and choral music.

He is among the most enduringly popular of classical composers, and his influence is profound on subsequent Western art music.

Ludwig van Beethoven composed his own early works in the shadow of Mozart and Joseph Haydn wrote: "Posterity will not see such a talent again in 100 years."

Unlike any other composer in musical history, Mozart wrote in all the musical genres of his day and excelled in every one. His taste, his command of form and his range of expression have made him seem the most universal of all composers.

Mozart's father, Leopold, came from a family of good standing (from which he was estranged), which included architects and bookbinders.

As a boy, Wolfgang Mozart's early talent for music was remarkable. At three he was picking out chords on the harpsichord, at four playing short pieces, and at five composing.

There are anecdotes about his precise memory of pitch, about his scribbling a concerto at the age of five and about his gentleness and sensitivity.

At 17, Mozart was engaged as a musician at the Salzburg court, but grew restless and travelled in search of a better position. While visiting Vienna in 1781, he was dismissed from his Salzburg position.

He chose to stay in the capital, where he achieved fame but little financial security. During his final years in Vienna, he composed many of his best-known symphonies, concertos and operas, and portions of the Requiem, which was largely unfinished at the time of his death on December 5, 1791.

*Franz Schubert*

*Johann Strauss I*

*Wolfgang Amadeus Mozart*

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

# *Visits to the Secretariat*

**March 20** Students from the Franklin University, Sorengo, Switzerland.

**March 21** Youth Information Officers from the German Federal Armed Forces (Bundeswehr), Berlin, Germany.

**March 21** Students from the Newbold College of Higher Education, Binfield, UK.

**March 22** Visit of students from Russia attending the Diplomatic Academy Vienna, Austria.

**March 23** Students from the University of Gothenburg, Sweden.


**March 28** Officials from the Air Force Command of the German Federal Armed Forces (Bundeswehr), Cologne, Germany.


**March 28** Visit of Golshani Tourist Group Nourowz 1396 / March 2017, IR Iran.


**March 30** Visit of students from Russia attending the Diplomatic Academy Vienna, Austria.

# Natiq Aliyev
# Minister of Industry and Energy
# Azerbaijan

Natiq Aliyev, Minister of Industry and Energy of the Azerbaijan Republic, passed away suddenly on June 9, 2017.

Born in Baku, Azerbaijan, in 1947, Minister Aliyev graduated in 1970 from the Azerbaijan State Oil Academy, earning a PhD in Geology and Mineral Sciences. He started working in the oil industry in 1970.

Over the years, Minister Aliyev held various positions within the oil industry. He also held various political posts. He was appointed in 1993 Chairman of the Board and President of Azerbaijan's State Oil Company, and held this position until December 2004, when he was appointed Minister of Industry and Energy.

In a letter sent to the President of Azerbaijan upon hearing of the Minister's sad and untimely passing, OPEC Secretary General, Mohammad Sanusi Barkindo, conveyed his condolences, along with those of the staff of the OPEC Secretariat.

Minister Aliyev's peers and fellow Ministers would greatly miss his "guidance and wisdom", said the Secretary General. "These traits were evidently on show during the diplomatic efforts that were [undertaken] in the second half of 2016", he noted, adding that they "led to the historic OPEC and non-OPEC 'Declaration of Cooperation'."

Calling Minister Aliyev "one of the key architects of this landmark decision", the Secretary General wished his soul repose and extended his condolences to his family — that they may be "granted strength and comfort during the coming days, months, and years."

## Forthcoming events

**Carbon management technology conference, July 17–20, 2017,** Houston, TX, USA. Details: Society of Petroleum Engineers, 10777 Westheimer, Suite #335, Houston, TX 77042, USA. Tel: +1 713 779 9595; fax: +1 713 779 4216; e-mail: spehou@spe.org; website: http://fscarbonmanagement.org/cmtc/2017.

**Unconventional resources technology conference, July 24–26, 2017,** Austin, TX, USA. Details: Society of Petroleum Engineers, 10777 Westheimer, Suite #335, Houston, TX 77042, USA. Tel: +1 713 779 9595; fax: +1 713 779 4216; e-mail: spehou@spe.org; website: http://urtec.org/2017.

**The bunkering week, July 25–28, 2017,** Singapore. Details: IBC Global Conferences, The Bookings Department, Informa UK Ltd, PO Box 406, West Byfleet KT14 6WL, UK. Tel: +44 207 017 55 18; fax: +44 207 017 47 15; e-mail: energycustserv@informa.com; website: www.bunkeringweek.com.

**5th Ship recycling congress, July 26–27, 2017,** Singapore. 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/ship-recycling-congress-asia.

**9th Chem/petrochem and refinery shutdowns and turnarounds, August 1–9, 2017,** Los Angeles, CA, USA. Details: Marcus Evans Conferences, 11 Connaught Place, London W2 2ET, UK. Tel: +44 203 002 3002; fax: +44 203 002 3003; e-mail: flaminiag@marcusevansuk.com; website: www.marcusevans-conferences-northamerican.com/marcusevans-conferences-event-details.asp?EventID=23394#.WQdJL9LysdU/?SRC=GulfOilGas.

**Power Nigeria 2017, September 5–7, 2017,** Lagos, Nigeria. 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.power-nigeria.com.

**SPE offshore Europe conference and exhibition, September 5–8, 2017,** Aberdeen, UK. Details: Society of Petroleum Engineers, Part Third Floor East, Portland House, 4 Great Portland Street, London W1W 8QJ, UK. Tel: +44 207 299 3300; fax: +44 207 299 3309; e-mail: spelon@spe.org; website: www.offshore-europe.co.uk.

**Pipeline development and expansion, September 7–8, 2017,** Houston, TX, USA. Details: Platts, 20 Canada Square, Canary Wharf, London E14 5LH, UK. Tel: +44 207 1766142; fax: +44 207 176 8512; e-mail: cynthia_rugg@platts.com; website: www.platts.com/events/americas/pipeline-development-and-expansion/index.

**Tanzania oil and gas congress, September 11–12, 2017,** Dar-es-Salaam, Tanzania. 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.cwctog.com.

**6th edition of cyber security for energy and utilities, September 11–13, 2017,** Abu Dhabi, UAE. 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://cybersecurityme.iqpc.ae/?utm_medium=portal&mac=OGIQ_Events_Learn_Listing.

**GTL technology forum and GasPro Americas, September 12–13, 2017,** Houston, TX, USA. Details: World Oil, PO Box 2608, Houston, TX 77252, USA. Tel: +1 713 529 4301; fax: +1 713 520 4433; e-mail: energyeventseditor@gulfpub.com; website: www.cvent.com/events/gtl-technology-forum-gaspro-americas-2017/event-summary-3f560fd9f2ca410ca03072619a2af731.aspx.

**Oil sands trade show and conference, September 12–13, 2017,** 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.

**7th NGLs conference and 5th annual petrochemical seminar, September 13–14, 2017,** Houston, TX, USA. Details: Platts, 20 Canada Square, Canary Wharf, London E14 5LH, UK. Tel: +44 207 1766142; fax: +44 207 176 8512; e-mail: cynthia_rugg@platts.com; website: www.platts.com/events/americas/ngls-petrochemicals/index.

**Future energy Uganda, September 13–14, 2017,** Kampala, Uganda. Details: Spintelligent (Pty) Ltd, 2nd fl, North Wing, Great Westerford, 240 Main Road, Rondebosch 7700, South Africa. Tel: +27 21 700 35 00; fax: +27 21 700 35 01; e-mail: natalie.bacon@spintelligent.com; website: www.future-energy-uganda.com.

**LNG transport, storage, handling, Indonesia, September 13–15, 2017,** Bali, Indonesia. Details: World Alliance for Decentralized Energy, Edinburgh Quay, 133 Fountainbridge, Edinburgh EH3 9BA, UK. Tel: +44 31 625 33 33; e-mail: infor@localpower.org; website: www.lng-world.com/lng_bali2016.

**Leadership summit, September 14, 2017,** London, UK. Details: The Petroleum Economist Ltd, 69 Carter Lane, London EC4V 5EQ, UK. Tel: +44 207 779 8800; fax: +44 207 779 8899; e-mail: customerservice@petroleum-economist.com; website: www.cvent.com/events/petroleum-economist-leadership-summit-2017/event-summary-03e76a90275e46deb849cc1c150c36bc.aspx.

**18th Abu Dhabi international downstream summit, September 17–19, 2017,** Abu Dhabi, UAE. Details: The World Refining Association, Bedford House, Fulham Green, 69-79 Fulham High Street, London SW6 3JW, UK. Tel: +44 207 38 48 013; fax: +44 207 38 47 843; e-mail: Support@clarionevents.com; website: http://adid.wraconferences.com.

**Global oil and gas — Middle East and North Africa 2017, September 17–19, 2017,** Cairo, Egypt. Details: 8 Tyers Gate, London SE1 3HX, UK. Tel: +44 44 20 33 28 95 81; e-mail: james@bme-global.com; website: www.thebmegroup.com.

**2nd Russia and CIS gas to chemicals conference, September 18–19, 2017,** Moscow, Russia. Details: EPC Conferences; 44 Oxford Drive, Bermondsey Street, London SE1 2FB, UK. Tel: +44 207 357 8394; fax: +44 207 357 8395; e-mail: Conferences@EuroPetro.com; website: www.europetro.com/event/60/0.

# Non-OPEC oil supply developments show recent increase

***May* 2017**


Although non-OPEC supply levels decreased sharply in 2016, preliminary data for the first few months of 2017 indicate an output increase, according to the OPEC Secretariat in Vienna. However, numerous factors may mitigate this during rest of the year.

According to its *Monthly Oil Market Report (MOMR)* for May, OPEC said low oil prices in 2016 had led to a reduction of around 23 per cent in global E&P investments compared to 2015, along with a deferral of several upstream projects. "Particularly in North America, E&P spending fell by around 38 per cent, as observed in the 48 per cent y-o-y decline in US rig counts, as well as lower well completions," the report said.

As a result, the report noted, "non-OPEC oil supply decreased sharply in 2016, contracting by 0.7 million barrels/day from the high growth of 2.3m b/d in 2014 and 1.5m b/d in 2015." Non-OPEC supply in 2016 also saw contractions in OECD Americas (0.5m b/d), China (0.3m b/d), and Latin America (0.1m b/d), while in the FSU an increase (0.2m b/d) was seen, driven mainly by robust output from Russia.

"The oil supply contraction in OECD Americas in 2016 was mainly due to US onshore crude oil output," the report explained. This includes "tight oil, along with annual declines in Mexico and outages in the Canadian oil sands." Meanwhile, US oil production showed a y-o-y decline of 0.4m b/d in 2016 – "but this trend has reversed so far in 2017, primarily due to higher oil prices together with cost cuts."

Looking ahead, the report suggested that non-OPEC supply performance in 2017 "will depend on many factors, including the world economy; higher spending by oil companies, particularly in North America; new economic and energy policies in major economies, especially the US; and the timely implementation of oil projects in Canada and Brazil, as well as oil price developments and to some extent geopolitics."

In fact, it noted that many US oil and gas companies have already stepped up activities in 2017 as they have started to increase their spending amid an incipient recovery in oil prices. "As a result, US crude oil production surpassed 9m b/d in February 2017, about 0.5m b/d higher than the low seen in September 2016," the report said. "For 2017, total US liquids production is forecast to increase by 0.82m b/d with crude oil contributing 0.6m b/d."

Taking a closer look at the first two months at the beginning of 2017, the report said that "tight crude output increased by 0.10m b/d from December 2016, while NGLs output rose by 0.26m b/d over the same period."

Additionally, with the pick-up in drilling activities, as well as increased cash flows, it noted that "US tight crude output is expected to rise rapidly and increase by 0.6m b/d in 2017." Overall, it said non-OPEC supply in 2017 is expected to increase by 0.95m b/d.

In addition to supply growth in the US, the report said "higher oil production is expected in Canada (0.22m b/d) and Brazil (0.21m b/d), while Mexico and China are forecast to see the largest contractions."

With regard to global supply levels, the report noted that "[a] large part of the excess supply overhang contained in floating storage has been reduced and the improvement in the world economy should help support oil demand."

However, it cautioned that "continued rebalancing in the oil market by year-end will require the collective efforts of all oil producers to increase market stability."

# MOMR ... oil market highlights

***May 2017***

The **OPEC Reference Basket** rose 2.0 per cent in April to average $51.34/barrel. Crude oil futures recovered on the high conformity by OPEC and non-OPEC with voluntary production adjustments and expectations for an extension to the year-end; however, upward potential was seen as limited by a resurgence in oil output, particularly in the US. ICE Brent increased 2.4 per cent to $53.82/b and NYMEX WTI rose 2.9 per cent to $51.12/b. The Brent-WTI spread narrowed slightly to $2.70/b, but still kept the arbitrage open for US crude exports. Money manager net long positions rose 30 per cent from the end of March until the middle of April, but dropped by one of the largest weekly falls on record in the last week of April.

The forecast for **global economic growth** remains at 3.3 per cent in 2017, compared to growth in 2016 of 3.0 per cent. The recent growth dynamic in the global economy has been confirmed with the exception of the US, which is still expected to rebound in the remainder of the year. While US growth remains at 2.2 per cent, Euro-zone growth in 2017 was revised to 1.7 per cent from 1.6 per cent. Japan's 2017 growth forecast remains at 1.2 per cent. China's 2017 growth was also revised higher to 6.5 per cent from 6.3 per cent, while India's forecast remains at 7.0 per cent. Russia's and Brazil's 2017 growth forecasts remain unchanged at 1.2 per cent and 0.5 per cent, respectively.

**World oil demand** in 2016 was revised higher by 65,000 b/d to reflect the most recent data. Total world oil demand growth for 2016 stood at 1.44m b/d to average 95.12m b/d. For 2017, oil demand growth is anticipated to be around 1.27m b/d, unchanged from the previous report with total oil demand expected at 96.38m b/d. Non-OECD will continue to lead growth at 1.04m b/d, while OECD continues to grow, albeit at a reduced pace of 0.23m b/d.

**Non-OPEC oil supply** in 2016 was revised marginally lower due to a downward adjustment in Russian oil supply in 4Q16 to now show a contraction of 0.71m b/d to average 57.3m b/d. The forecast for 2017 was revised up by 0.37m b/d to show growth of 0.95m b/d, following upward adjustments in all quarters, mostly in the US, to average 58.3m b/d. The revisions were driven by actual production data for February, as well as higher expectations for the remainder of the year. OPEC NGLs and non-conventional oil production in 2017 was revised up by 40,000 b/d to average 6.22m b/d, representing growth of 0.17m b/d. In April, OPEC production decreased by 18,000 b/d, according to secondary sources, to average 31.73m b/d.

**Product markets** strengthened in April in the Atlantic basin, supported by stronger domestic demand amid higher export opportunities. Lower inflows and heavy refinery maintenance also resulted in a tighter market. The main support came from gasoline, with US domestic demand recovering in April from the slump suffered during the first quarter amid the shift to summer grades and higher exports to Latin America. Meanwhile, Asia margins continued healthily on the back of firm regional demand at a time of peak maintenance in the region.

Average tanker spot **freight rates** fell 0.4 per cent from the month before, despite a stronger VLCC market. VLCC spot freight rates improved, rising by 20 per cent on average, as a result of enhanced activity in the market and a tightening in tonnage supply. Nevertheless, the decline in average dirty spot freight rates was driven by the drop in Suezmax and Aframax freight rates, which ended the month down eight per cent and ten per cent, respectively, as tonnage demand for both classes was limited, while tonnage oversupply was dominant.

Total **OECD commercial oil stocks** fell in March to stand at 3,013m b. At this level, OECD commercial oil stocks are 276m b above the latest five-year average. Crude and products stocks indicated a surplus of around 187m b and 89m b above the seasonal norm, respectively. In terms of forward cover, OECD commercial stocks stood at 64.8 days, some 4.8 days higher than the latest five-year average.

**Demand for OPEC crude** in 2016 now stands at 31.8m b/d, which is 2.0m b/d higher than in the previous year. In 2017, demand for OPEC crude is projected at 31.9m b/d, around 0.2m b/d higher than last year.

*The feature article and oil market highlights are taken from OPEC's Monthly Oil Market Report (MOMR) for May 2017. 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.*

# World oil market prospects favorable for the second half of 2017

***June* 2017**


The world GDP forecast for 2017 is a good indicator of the positive sentiment that is currently boosting the market, a feeling which is expected to continue into the second half of the year, according to the OPEC Secretariat in Vienna.

According to its *Monthly Oil Market Report (MOMR)* for June, the underlying global dynamic is continuing to improve overall, despite some political challenges. Additionally, oil prices in particular will continue to be a key determinant for the wellbeing of most producer economies and thus will continue to influence global growth.

"The gradual recovery of the world economy continues and stronger-than-anticipated growth in 1Q17 has lifted the world GDP growth forecast for 2017 to 3.4 per cent, up from the 3.1 per cent growth seen in 2016," according to the June *MOMR*.

Political uncertainties, including the recent general election in the UK, seem unlikely to hinder broadly healthy OECD growth in the second half of the year. Emerging economies show more variability, with the pace of growth in China expected to continue to slow gradually in the second half of the year. This is counter-balanced by India, where momentum is seen to be picking up as the negative impact of demonetization fades. Russia and Brazil are also expected to perform well, with some uncertainties at play.

Monetary policy will remain a focus as the US Federal Reserve may raise interest rates further in 2H17, which could create some capital outflows from the emerging economies.

Global oil demand should improve in 2H17, with a 2m b/d increase in total consumption to reach 97.4m b/d, slightly down from the 95.4m b/d seen in 1H17. OECD demand will pick up somewhat by about 0.2m b/d y-o-y, with OECD Americas being the largest contributor to this growth, thanks to the driving season providing a boost in demand. In OECD Europe, demand will rise slightly, while in OECD Pacific it will contract, though this decline will be moderated by strong growth in South Korea.

In non-OECD, oil demand is expected to grow by around 1.0m b/d y-o-y for the second half of 2017. This is expected to come largely from India as it recovers from demonetization, though China will also contribute to demand growth due to developments in the petrochemical industry and the transportation sector.

Meanwhile, non-OPEC supply will increase by about 0.5m b/d in the second half of the year over the first half to average 58.4m b/d, with the US being the main driver behind this growth. The US will contribute 0.76m b/d, while Brazil and Canada will grow by 0.12 and 0.06, respectively. However, this will be somewhat offset by lower production from Russia, down by 0.13m b/d, China and Indonesia, each falling by 0.06m b/d and Norway, which will drop by 0.05m b/d.

The OECD is expected to grow by 0.71m b/d in 2H17, which will broadly offset declines in the former Soviet Union and elsewhere of 0.18m b/d.

OECD commercial oil inventories have seen a decline in the first four months of the year, down to 251m b from 339m b compared with the five-year average. This is presumed to continue in the second half of the year with help of ongoing production adjustments by OPEC and participating non-OPEC producing countries.

"These trends, along with the steady decline in oil in floating storage, indicate that the rebalancing of the market is underway, but at a slower pace, given the changes in fundamentals since December, especially the shift in US supply from an expected contraction to positive growth," stated the June *MOMR*.

Due to these developments, OPEC and participating non-OPEC countries chose on May 25 at the conclusion of the 172nd Meeting of the Conference and the 2nd OPEC and non-OPEC Ministerial Meeting to extend production adjustments for a further nine months until March 2018, in recognition of the continuing need for cooperation among oil exporting countries in order to achieve lasting stability in the oil market.

# MOMR ... oil market highlights

*June 2017*

The **OPEC Reference Basket** fell 4.2 per cent in May to average $49.20/b. Crude futures prices tumbled as supply continued to be plentiful with US output continuing its upward trend this year, despite OPEC and non-OPEC production adjustments. ICE Brent ended 4.5 per cent lower at $51.40/b, while NYMEX WTI dropped five per cent to $48.54/b. The Brent-WTI spread widened to $2.86/b, further supporting US exports. Money managers decreased bets on higher oil prices in both exchanges, trimming combined net length positions in futures and options to November 2016 levels.

After stronger than anticipated growth momentum since the beginning of the year, the forecast for **global economic growth** has been revised up to 3.4 per cent in 2017, following growth of 3.1 per cent in 2016. The recent growth dynamic in the global economy has been confirmed with the exception of potentially temporary dips in the US and India. US growth in 2017 remains at 2.2 per cent and the Euro-zone at 1.7 per cent, while Japan's growth forecast was revised up to 1.4 per cent. The forecasts for China and India remain unchanged at 6.5 per cent and 7.0 per cent, respectively, in 2017. Similarly, the forecasts for Russia and Brazil also remain in line with the previous report at 1.2 per cent and 0.5 per cent, respectively.

**World oil demand** is estimated to grow by 1.44m b/d in 2016 due to upward revisions of data, in line with the previous report to average 95.12m b/d. Projected oil demand growth for 2017 was also unchanged at 1.27m b/d to average 96.38m b/d. OECD consumption is seen growing by 0.23m b/d in 2017, in line with the previous report, following offsetting revisions in OECD Americas and Asia Pacific. The forecast for oil demand growth in China and India have also been left unchanged at 0.34m b/d and 0.12m b/d, respectively.

**Non-OPEC oil supply** is estimated to have averaged 57.30m b/d in 2016, a contraction of 0.71m b/d and unchanged from the previous report. In 2017, non-OPEC oil supply is projected to grow by 0.84m b/d, following a downward revision of 0.11m b/d to average 58.14m b/d. Lower output from Russia, as well as Brunei, the Sudans and Kazakhstan following the OPEC and non-OPEC decision to extend production adjustments for nine months offset higher growth in Canada and the UK. US oil supply growth for 2017 was also revised down by 30,000 b/d due to lower output than expected in 1Q17. OPEC NGLs production and non-conventional liquids forecast to grow by 0.17m b/d in 2017 to average 6.22m b/d. In May 2017, OPEC crude oil production increased by 336,000 b/d to average 32.14m b/d, according to secondary sources.

**Refinery margins** in the Atlantic Basin fell in May, despite the strength seen in US gasoline crack spreads amid higher domestic demand. This was due to weakness in the middle of the barrel as relatively higher yields and increased refinery utilisation outweighed the improvement in gasoil demand. Meanwhile in Asia, margins weakened on supply pressure following the peak of the maintenance season amid increasing inflows to the region.

**Tanker market** sentiment weakened in May as spot freight rates in both dirty and clean segments mostly dropped from the previous month. The decline in freight rates was driven by light tonnage demand and high vessel availability. Aframax rates were the exception, with average spot freight rates improving due to high tonnage demand for several destinations combined with port delays and replacements. Clean tanker freight rates declined on average, mainly due to a weak market West of Suez.

Total **OECD commercial oil stocks** fell in April to stand at 3,005m b. At this level, OECD commercial oil stocks were 251m b above the latest five-year average. Crude and products stocks stood at a surplus above the seasonal norm of around 171m b and 80m b, respectively. In terms of days of forward cover, OECD commercial stocks stood at 64.1 days, some 4.1 days higher than the latest five-year average.

**Demand for OPEC crude** stood at 31.8m b/d in 2016, some 2.0m b/d higher than in 2015. In 2017, the demand for OPEC crude is projected at 32.0m b/d, around 0.3m b/d higher than the previous year.

*The feature article and oil market highlights are taken from OPEC's Monthly Oil Market Report (MOMR) for June 2017. 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

| Crude/Member Country | 2016 May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | 2017 Jan | Feb | Mar | Apr | May | Weeks 17–21/2017 (week ending) Apr 28 | May 5 | May 12 | May 19 | May 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arab Light – Saudi Arabia | 43.48 | 46.28 | 43.14 | 43.47 | 42.70 | 48.26 | 43.32 | 51.92 | 52.29 | 53.63 | 50.68 | 51.64 | 49.30 | 49.66 | 48.30 | 47.77 | 49.96 | 51.10 |
| Basrah Light – Iraq | 42.05 | 44.63 | 41.37 | 42.01 | 41.88 | 46.79 | 41.97 | 50.87 | 51.66 | 52.66 | 49.82 | 50.75 | 48.56 | 48.66 | 47.45 | 46.90 | 49.39 | 50.53 |
| Bonny Light – Nigeria | 46.85 | 48.48 | 45.30 | 46.35 | 47.77 | 50.83 | 45.20 | 53.91 | 54.98 | 55.24 | 51.91 | 53.02 | 50.77 | 50.60 | 49.15 | 48.75 | 52.09 | 53.13 |
| Es Sider – Libya | 45.83 | 47.28 | 44.00 | 44.85 | 45.69 | 48.74 | 43.63 | 52.12 | 53.08 | 53.46 | 50.00 | 51.04 | 48.90 | 48.62 | 47.28 | 46.88 | 50.22 | 51.26 |
| Girassol – Angola | 46.58 | 48.30 | 45.09 | 46.06 | 46.66 | 49.37 | 44.95 | 53.41 | 54.41 | 55.21 | 51.89 | 52.68 | 50.36 | 50.33 | 48.87 | 48.27 | 51.57 | 52.71 |
| Iran Heavy – IR Iran | 41.67 | 44.68 | 41.59 | 42.17 | 41.39 | 47.30 | 42.42 | 51.41 | 51.90 | 53.16 | 50.27 | 51.12 | 49.00 | 49.13 | 48.11 | 47.49 | 49.63 | 50.81 |
| Kuwait Export – Kuwait | 41.60 | 44.50 | 41.37 | 41.88 | 41.22 | 47.04 | 42.14 | 50.93 | 51.48 | 52.85 | 49.87 | 50.81 | 48.65 | 48.84 | 47.72 | 47.13 | 49.29 | 50.45 |
| Marine – Qatar | 44.13 | 46.37 | 43.53 | 43.44 | 43.51 | 48.13 | 44.25 | 52.08 | 53.44 | 54.14 | 50.89 | 52.39 | 50.24 | 50.56 | 49.39 | 48.63 | 50.74 | 52.14 |
| Merey – Venezuela | 34.28 | 38.22 | 36.71 | 36.46 | 37.38 | 42.36 | 39.37 | 45.86 | 46.81 | 47.03 | 44.14 | 46.15 | 45.16 | 44.65 | 44.03 | 43.57 | 45.85 | 46.99 |
| Murban – UAE | 47.12 | 49.28 | 46.54 | 46.25 | 46.42 | 51.19 | 47.25 | 54.93 | 55.97 | 56.31 | 52.96 | 54.32 | 51.96 | 52.46 | 51.35 | 50.47 | 52.46 | 53.65 |
| Oriente – Ecuador | 41.96 | 44.03 | 40.72 | 40.84 | 41.22 | 45.98 | 41.69 | 48.67 | 48.64 | 50.08 | 46.83 | 48.70 | 46.91 | 46.91 | 45.38 | 45.30 | 47.69 | 48.77 |
| Rabi Light – Gabon* | 45.48 | 47.15 | 44.03 | 44.90 | 45.51 | 48.15 | 43.92 | 52.22 | 53.13 | 54.04 | 50.63 | 51.71 | 49.48 | 49.20 | 47.86 | 47.46 | 50.80 | 51.84 |
| Saharan Blend – Algeria | 47.73 | 48.98 | 45.30 | 46.35 | 47.09 | 49.79 | 45.13 | 53.82 | 54.84 | 55.06 | 51.40 | 51.84 | 49.80 | 49.42 | 48.18 | 47.78 | 51.12 | 52.16 |
| **OPEC Reference Basket** | **43.21** | **45.84** | **42.68** | **43.10** | **42.89** | **47.87** | **43.22** | **51.67** | **52.40** | **53.37** | **50.32** | **51.37** | **49.20** | **49.35** | **48.14** | **47.57** | **49.96** | **51.11** |

## Table 2: Selected spot crude prices

$/b

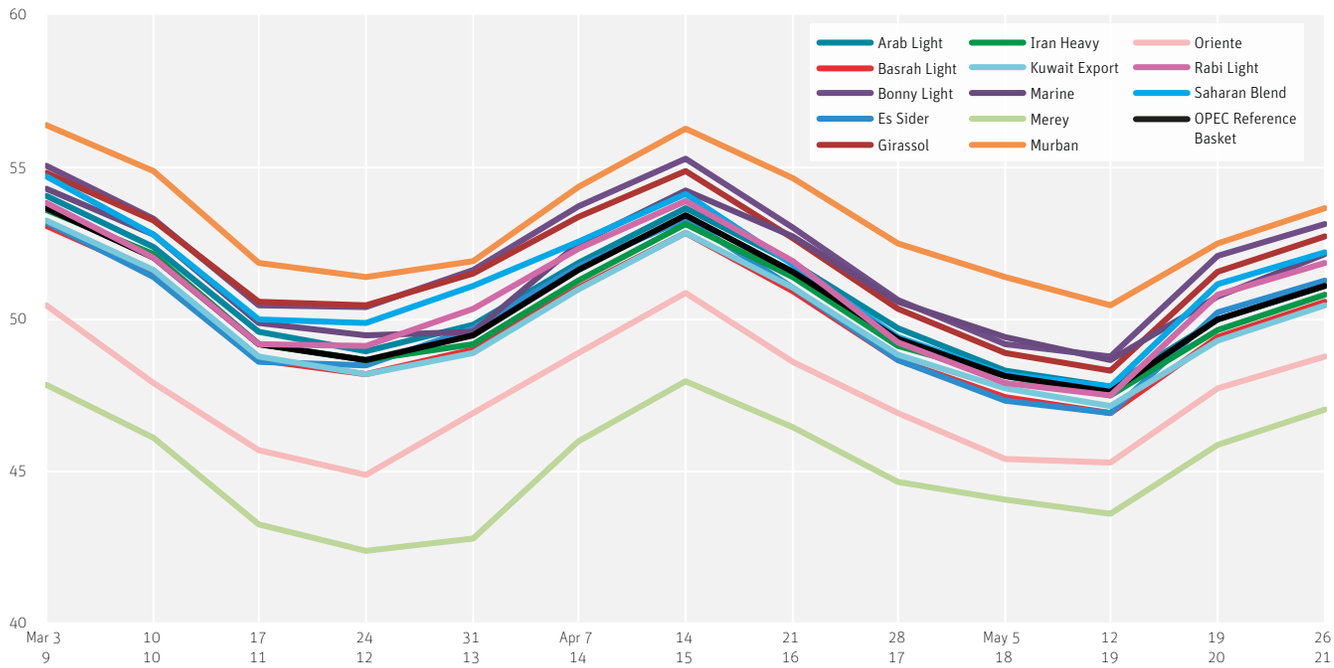
| Crude/Member Country | 2016 May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | 2017 Jan | Feb | Mar | Apr | May | Weeks 17–21/2017 (week ending) Apr 28 | May 5 | May 12 | May 19 | May 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arab Heavy – Saudi Arabia | 40.69 | 43.68 | 40.40 | 41.00 | 40.34 | 46.26 | 40.96 | 49.70 | 50.56 | 51.97 | 48.86 | 49.97 | 47.92 | 48.00 | 47.07 | 46.42 | 48.54 | 49.73 |
| Brega – Libya | 46.83 | 48.28 | 44.95 | 45.87 | 46.74 | 49.79 | 45.18 | 53.52 | 54.43 | 54.86 | 51.40 | 52.19 | 49.85 | 49.77 | 48.23 | 47.83 | 51.17 | 52.21 |
| North Sea Dtd – North Sea | 46.83 | 48.28 | 45.00 | 45.85 | 46.69 | 49.74 | 45.13 | 53.57 | 54.58 | 55.06 | 51.60 | 52.59 | 50.45 | 50.17 | 48.83 | 48.43 | 51.77 | 52.81 |
| Dubai – UAE | 44.29 | 46.25 | 42.64 | 43.58 | 43.67 | 48.94 | 43.98 | 52.08 | 53.71 | 54.41 | 51.21 | 52.31 | 50.47 | 50.36 | 49.55 | 48.94 | 51.07 | 52.29 |
| Ekofisk – North Sea | 47.70 | 48.54 | 44.99 | 45.79 | 47.10 | 49.58 | 44.97 | 53.67 | 54.62 | 55.17 | 51.50 | 52.57 | 50.43 | 50.09 | 48.32 | 48.19 | 51.80 | 53.07 |
| Iran Light – IR Iran | 44.65 | 46.38 | 43.54 | 43.66 | 44.23 | 47.99 | 43.45 | 51.85 | 52.35 | 52.35 | 49.13 | 50.04 | 47.34 | 47.35 | 45.42 | 45.21 | 48.73 | 49.71 |
| Isthmus – Mexico | 44.76 | 47.51 | 45.07 | 44.22 | 44.55 | 49.91 | 45.64 | 53.81 | 54.98 | 56.09 | 52.26 | 53.81 | 51.85 | 51.90 | 50.35 | 50.23 | 52.79 | 53.68 |
| Oman – Oman | 44.37 | 46.61 | 43.45 | 44.02 | 44.01 | 49.18 | 44.54 | 52.72 | 54.01 | 55.12 | 51.71 | 52.82 | 50.57 | 50.84 | 49.79 | 49.08 | 51.20 | 52.37 |
| Suez Mix – Egypt | 43.31 | 44.90 | 42.06 | 42.20 | 42.78 | 46.54 | 42.13 | 50.59 | 51.72 | 51.97 | 48.24 | 49.71 | 47.31 | 47.32 | 45.39 | 45.18 | 48.70 | 49.68 |
| Minas – Indonesia* | 48.64 | 51.56 | 41.84 | 41.26 | 40.28 | 45.20 | 40.72 | 49.68 | 50.63 | 51.19 | 48.35 | 47.95 | 45.96 | 45.39 | 44.29 | 43.55 | 46.87 | 48.63 |
| Urals – Russia | 45.08 | 46.60 | 43.76 | 44.06 | 44.48 | 48.24 | 43.83 | 52.28 | 53.42 | 53.67 | 49.94 | 51.55 | 49.04 | 49.02 | 47.48 | 46.88 | 50.40 | 51.38 |
| WTI – North America | 46.84 | 48.74 | 44.90 | 44.75 | 45.16 | 49.89 | 45.67 | 52.02 | 52.50 | 53.40 | 49.58 | 51.06 | 48.56 | 49.20 | 47.21 | 47.06 | 49.25 | 50.30 |

*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).*

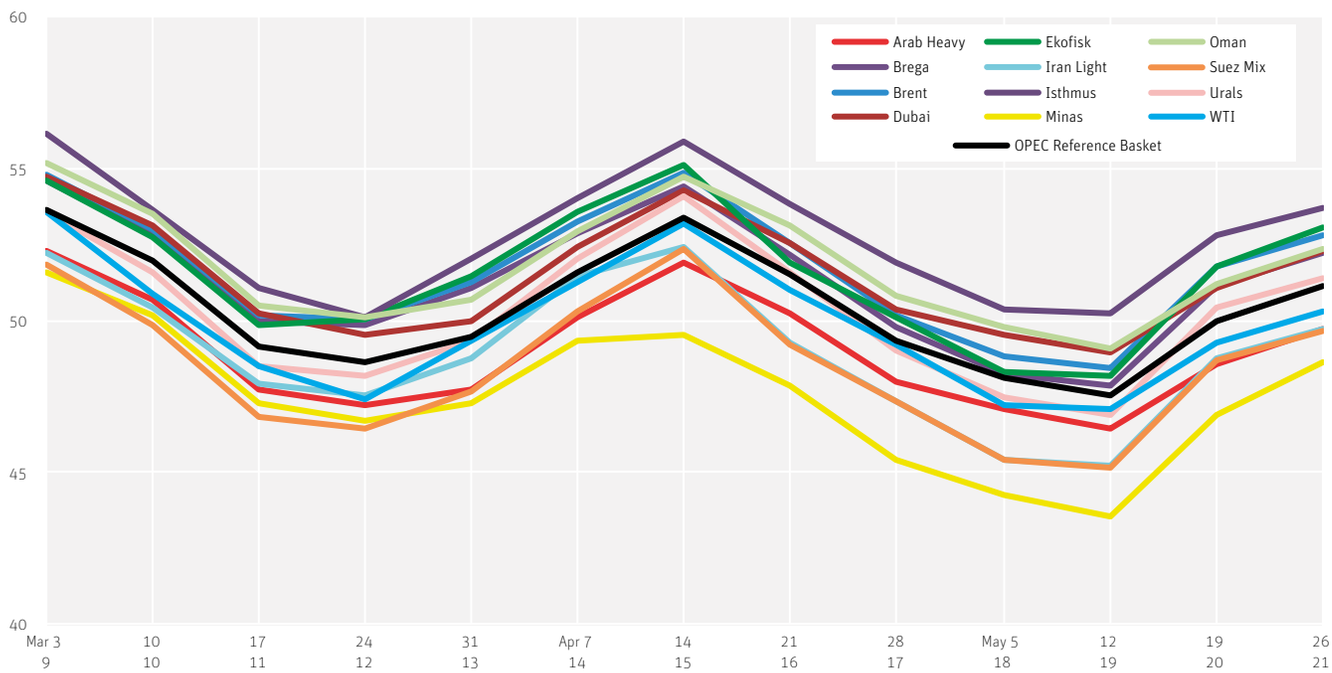
* *Indonesia joined in 1962, suspended its Membership on December 31, 2008, reactivated it again on January 1, 2016, but suspended its Membership again on December 31, 2016. Gabon joined in 1975 and left in 1995; it reactivated its Membership on July 1, 2016.*

*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, 2017 $/b




## Graph 2: Evolution of selected spot crude prices, 2017 $/b



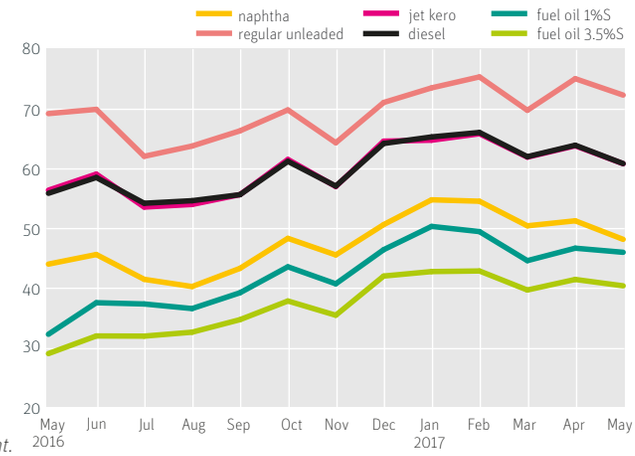

*Note: As per the decision of the 109th ECB (held in February 2008), the OPEC Reference Basket (ORB) has been recalculated including the Ecuadorian crude Oriente retroactive as of October 19, 2007. As per the decision of the 108th ECB, the basket has been recalculated including the Angolan crude Girassol, 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 |
|---|---|---|---|---|---|---|---|
| **2016** | May | 44.28 | 69.51 | 56.15 | 56.67 | 32.52 | 29.28 |
| | June | 45.89 | 70.22 | 58.80 | 59.37 | 37.81 | 32.24 |
| | July | 41.73 | 62.35 | 54.48 | 53.84 | 37.60 | 32.21 |
| | August | 40.52 | 64.07 | 54.91 | 54.28 | 36.83 | 32.87 |
| | September | 43.57 | 66.62 | 55.92 | 55.93 | 39.48 | 34.97 |
| | October | 48.60 | 70.13 | 61.50 | 61.82 | 43.83 | 38.10 |
| | November | 45.82 | 64.62 | 57.36 | 57.29 | 40.98 | 35.71 |
| | December | 50.90 | 71.37 | 64.50 | 64.89 | 46.70 | 42.28 |
| **2017** | January | 55.06 | 73.82 | 65.60 | 65.05 | 50.60 | 43.03 |
| | February | 54.82 | 75.66 | 66.35 | 66.13 | 49.73 | 43.13 |
| | March | 50.70 | 70.06 | 62.29 | 62.21 | 44.86 | 39.94 |
| | April | 51.54 | 75.36 | 64.21 | 64.11 | 46.95 | 41.71 |
| | May | 48.43 | 72.61 | 61.13 | 61.11 | 46.26 | 40.64 |

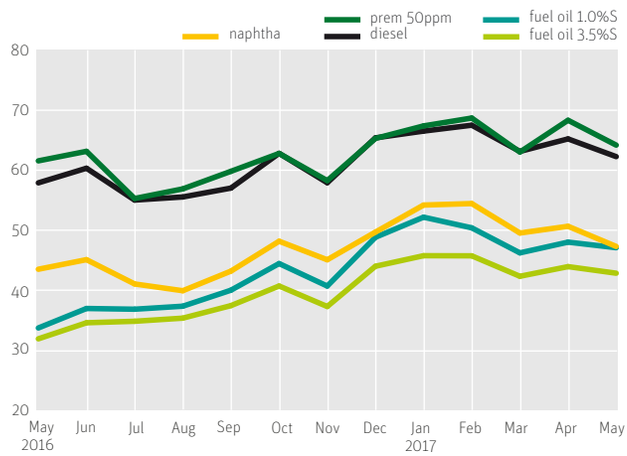
*Note: Prices of premium gasoline and diesel from January 1, 2008, are with 10 ppm sulphur content.*




## 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 |
|---|---|---|---|---|---|---|
| **2016** | May | 43.51 | 61.12 | 57.91 | 33.72 | 31.91 |
| | June | 45.11 | 62.71 | 60.35 | 36.97 | 34.59 |
| | July | 41.06 | 54.85 | 55.04 | 36.85 | 34.84 |
| | August | 39.93 | 56.45 | 55.56 | 37.35 | 35.36 |
| | September | 43.20 | 59.38 | 57.04 | 40.02 | 37.45 |
| | October | 48.18 | 62.36 | 62.83 | 44.46 | 40.72 |
| | November | 45.09 | 57.83 | 57.93 | 40.71 | 37.30 |
| | December | 49.70 | 64.86 | 65.41 | 48.84 | 44.01 |
| **2017** | January | 54.21 | 66.95 | 66.54 | 52.19 | 45.77 |
| | February | 54.46 | 68.26 | 67.52 | 50.41 | 45.75 |
| | March | 49.55 | 62.59 | 63.15 | 46.24 | 42.34 |
| | April | 50.67 | 67.89 | 65.24 | 48.03 | 43.95 |
| | May | 47.31 | 63.74 | 62.28 | 47.10 | 42.85 |



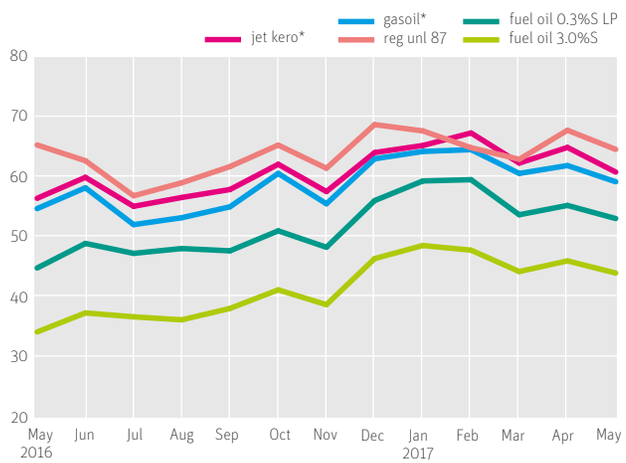

## Table and Graph 5: US East Coast market — spot cargoes, New York

*$/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 |
|---|---|---|---|---|---|---|
| **2016** | May | 65.21 | 54.64 | 56.35 | 44.78 | 34.16 |
| | June | 62.59 | 58.10 | 59.83 | 48.86 | 37.32 |
| | July | 56.77 | 51.98 | 55.02 | 47.21 | 36.67 |
| | August | 58.93 | 53.13 | 56.49 | 48.01 | 36.17 |
| | September | 61.62 | 54.94 | 57.81 | 47.63 | 38.07 |
| | October | 65.19 | 60.48 | 62.00 | 50.95 | 41.15 |
| | November | 61.34 | 55.44 | 57.47 | 48.22 | 38.69 |
| | December | 68.59 | 62.91 | 63.94 | 55.97 | 46.34 |
| **2017** | January | 67.54 | 64.13 | 65.12 | 59.23 | 48.51 |
| | February | 64.75 | 64.43 | 67.20 | 59.44 | 47.74 |
| | March | 62.83 | 60.48 | 62.20 | 53.62 | 44.19 |
| | April | 67.65 | 61.79 | 64.80 | 55.17 | 45.96 |
| | May | 64.47 | 59.10 | 60.71 | 52.99 | 43.94 |

* *FOB barge spot prices.*

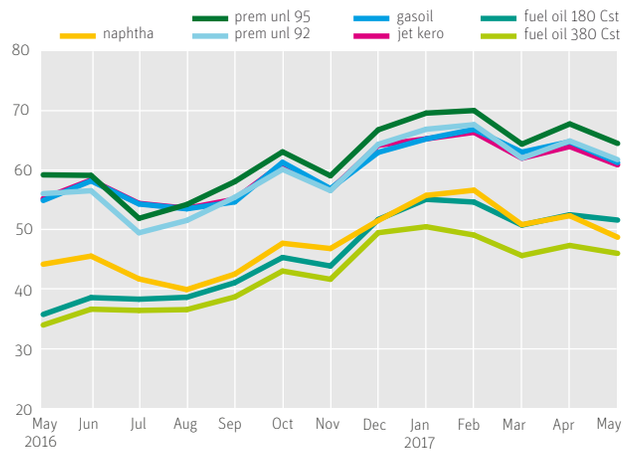
*Source: Platts. As of January 1, 2016, Argus. Prices are average of available days.*



## Table and Graph 6: Singapore market – spot cargoes, fob

*$/b*

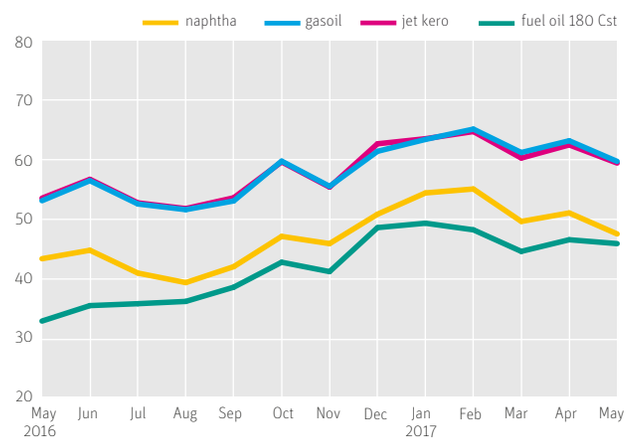
| | | naphtha | premium gasoline unl 95 | premium gasoline unl 92 | gasoil | jet kero | fuel oil 180 Cst | fuel oil 380 Cst |
|---|---|---|---|---|---|---|---|---|
| 2016 | May | 44.20 | 59.14 | 56.00 | 54.86 | 55.18 | 35.80 | 34.03 |
| | June | 45.56 | 59.05 | 56.49 | 58.14 | 58.27 | 38.62 | 36.68 |
| | July | 41.74 | 51.87 | 49.46 | 54.27 | 54.37 | 38.35 | 36.47 |
| | August | 39.96 | 54.18 | 51.52 | 53.47 | 53.55 | 38.67 | 36.61 |
| | September | 42.54 | 58.00 | 55.38 | 54.62 | 55.07 | 41.11 | 38.72 |
| | October | 47.70 | 62.99 | 60.06 | 61.23 | 61.02 | 45.33 | 43.06 |
| | November | 46.82 | 58.99 | 56.51 | 56.84 | 56.63 | 43.90 | 41.68 |
| | December | 51.51 | 66.68 | 64.25 | 62.91 | 64.10 | 51.68 | 49.47 |
| 2017 | January | 55.71 | 69.47 | 66.77 | 65.15 | 65.17 | 55.05 | 50.47 |
| | February | 56.58 | 69.90 | 67.54 | 66.76 | 66.26 | 54.59 | 49.07 |
| | March | 50.82 | 64.28 | 61.94 | 62.94 | 61.93 | 50.74 | 45.64 |
| | 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 |




## Table and Graph 7: Middle East Gulf market – spot cargoes, fob

*$/b*

| | | naphtha | gasoil | jet kero | fuel oil 180 Cst |
|---|---|---|---|---|---|
| 2016 | May | 43.40 | 53.12 | 53.54 | 32.96 |
| | June | 44.82 | 56.47 | 56.70 | 35.55 |
| | July | 41.00 | 52.57 | 52.76 | 35.87 |
| | August | 39.40 | 51.62 | 51.80 | 36.25 |
| | September | 42.07 | 53.08 | 53.61 | 38.63 |
| | October | 47.14 | 59.75 | 59.62 | 42.81 |
| | November | 45.93 | 55.53 | 55.39 | 41.24 |
| | December | 50.85 | 61.39 | 62.65 | 48.61 |
| 2017 | January | 54.42 | 63.38 | 63.50 | 49.35 |
| | February | 55.08 | 65.11 | 64.70 | 48.24 |
| | March | 49.65 | 61.19 | 60.26 | 44.63 |
| | April | 51.07 | 63.16 | 62.46 | 46.58 |
| | May | 47.55 | 59.70 | 59.42 | 45.93 |




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

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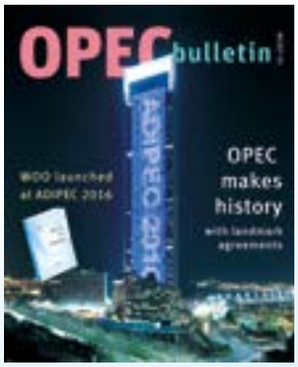


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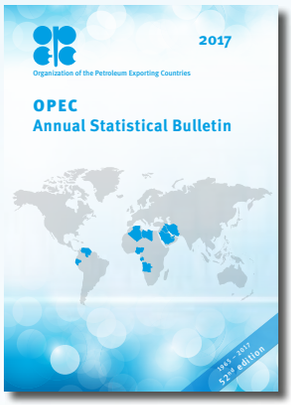


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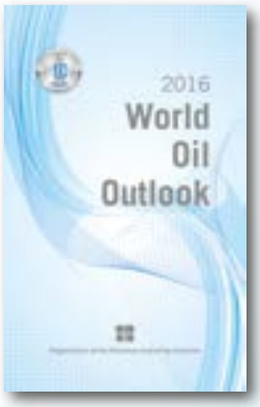


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