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Continental Focus, International Reach

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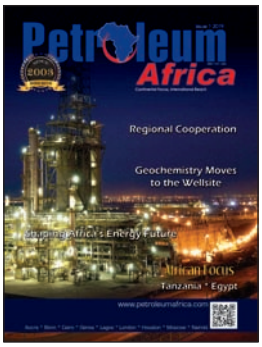

Source: Midor Egypt

Egypt boasts a thriving downstream sector

Egypt Takes Over AU Chairmanship

Rwandan President Paul Kagame's term as African Union chair, came to an end. Taking over the duties of the AU is Egyptian President Abdel Fattah el-Sisi. Chairmanship is rotated between the five regions of the continent.

Source: Kremlin

Abdel Fattah el-Sisi

Source: Wikimedia Commons /Veni Markovski

Paul Kagame

Amnesty International expressed some concern with el-Sisi taking over. "During his time in power President Abdel Fattah el-Sisi has demonstrated a shocking contempt for human rights. Under his leadership the country has undergone a catastrophic decline in rights and freedoms," said Najia Bounaim, Amnesty's North Africa Campaigns Director.

"There are real fears about the potential impact his chairmanship could have on the independence of regional human rights mechanisms and their future engagement with civil society."

Since 2015, Egypt has orchestrated a vicious and sustained political attack against its people and opponents, says the African Commission on Human and Peoples' Rights (ACHPR), the mechanism that aims to monitor African states' human rights records. Dozens of cases alleging serious human rights violations have been lodged against Egypt at the ACHPR.

The Egyptian authorities have carried out mass killings of protestors, widespread enforced disappearances, and sentenced hundreds to death following unfair trials. The authorities have also orchestrated the worst crackdown on freedom of expression in the country's recent history.

The Egyptian parliament is considering a number of proposed constitutional amendments that would expand the scope of military trials, undermine judicial independence and allow el-Sisi to potentially stay on as a president until 2034.

"The African Union member states must ensure that Egypt, as political head of the organization for 2019, upholds the African Union's values and principles, including respect for human and peoples' rights," said Najia Bounaim.

Amnesty International also called on Egypt to ratify key African Union human rights treaties including the Maputo Protocol on the Rights of Women in Africa, the Protocol on the Establishment of the African Court on Human and Peoples' Rights, and the African Charter on Democracy, Elections and Governance.

Disputed DRC Elections Stoke Fears of Violence

Although fraught with challenges of widespread election fraud, the elections that took place in the Democratic Republic of Congo (DRC) on December 30 will realize the first democratic transfer of power in the country's history.

After a significant delay, the DR Congo election commission (known as CENI) on January 10 issued a provisional result, declaring opposition leader Felix Tshisekedi the winner of the vote. According to news reports, the preliminary results announced by CENI, did not tally with the unofficial figures gathered by independent poll observers. According to CENI, Mr. Tshisekedi took more than 38% of the votes cast, ahead of rival presidential hopefuls Martin Fayalu (34.8%)and ruling party candidate, Emmanuel Ramazani Shadary. Mr. Fayalu immediately rejected the result.

Following the announcement of the provisional results of the long-delayed presidential election, United Nations Secretary-General António Guterres appealed for all parties to "refrain from violence" in the DRC.

"The Secretary-General calls on all stakeholders to refrain from violence and to channel any eventual electoral disputes through the established institutional mechanisms in line with the DRC's Constitution and relevant electoral laws," said Mr. Guterres in a statement released by his Spokesperson.

Meanwhile, members of the UN Security Council congratulated the millions of Congolese people who went to the polls with calm and determination to express their choices and commended the Congolese people and political actors for the conduct of the presidential, national and provincial elections, which saw broad and inclusive participation of political parties. They further welcomed the important role played by national as well as the regional observation missions of SADC and the African Union and took note of their efforts in promoting transparent and fair elections among their members.

Al-Shabaab Hits Kenya Twice

Two attacks by Somali terrorist group al-Shabaab have the East African country on high alert. An almost 20-hour siege of the DusitD2 hotel and office complex on January 15 by a suicide bomber and four gunmen left 21 dead and many others wounded.

Less than a week later, on January 21, Kenyan police thwarted an attack by suspected al-Shabaab militants on a Chinese-owned construction company.

The assailants wounded one person while they attempted to hit the site in Garissa county, not far from the Kenyan-Somali border, owned by a Chinese road construction company that is building the Garissa-Modogashe highway.

Preferential Tariffs to Aid Western Sahara's Development

On January 16, the European Parliament backed a proposal to lower tariffs in the territory of Western Sahara to the same level as Moroccan tariffs, to benefit local populations. The Parliament gave the green light by 444 votes to 167 and 68 abstentions, to extend the preferential tariff rates to the territory of Western Sahara after the European Commission and Morocco agreed on a traceability mechanism, which helps define the origin of products exported from the territory. This mechanism was requested by the Committee on International Trade prior to its recommendation for consent.

It guarantees that products coming from the Western Sahara can be clearly tracked, to make sure the benefits of the lower tariffs go to the local population and that they are measurable, a key condition to MEPs' backing.

In the accompanying resolution, adopted by 442 votes to 172 with 65 abstentions, the MEPs emphasized that "the [local] Sahrawi people have the right to develop while awaiting a political solution" on the status of the area of Western Sahara. Preferential trade tariffs granted to Morocco were withdrawn from the territory following a 2016 decision of the EU Court of Justice.

MEPs also pointed out that the tariff preferences enjoyed by the territory between 2013 and 2016 had a positive impact on the agricultural and fisheries sector, investment in infrastructure, health and education. The non-application of the preferences, on the other hand, would have had "adverse effects", they say.

After the Parliament's consent, the Council will conclude the agreement, which will then enter into force.

Source: European Parliament

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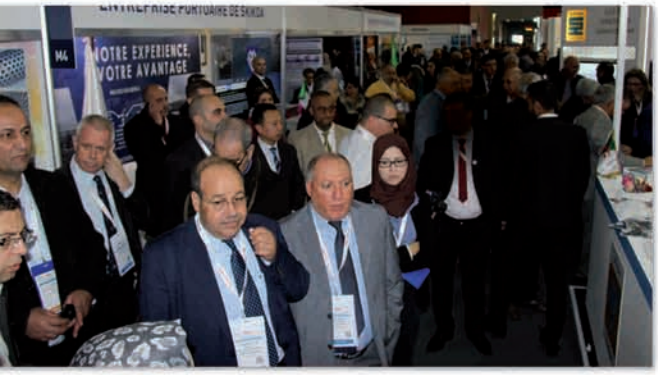

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Oran will host 2021 Mediterranean Games

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MESSAGE
FROM THE EDITOR

Happy New Year! I hope you are all off to a good start in 2019!

For those of you not yet aware, *Petroleum Africa* has instituted a number of changes for 2019. We will now publish the magazine six time per year. Not to worry however, we will still deliver the most relevant and up-to-date content in each of our six issues. In addition, there will now be more full-length editorial features available on *www.petroleumafrica.com.* Finally, for our advertisers, there are a number of new marketing options to choose from. Feel free to email us to request a copy of the 2019 Media Planner for more information.

Over the past two decades, those interested in the African oil and gas patch have opined over the competition between American, European, and Chinese firms for access to lucrative energy contracts in the continent. These discussions often touched on the rigid transparency issues demanded by the Western firms and the more or less "no strings attached"offerings by the Chinese. While this discussion still exists to a lesser extent, it looks like in the decade going forward there will be a new talking point – Middle East entrants and their often flexible and generous investment terms.

Kuwait Energy, Mubadala Petroleum, RakGas, and Qatar Petroleum are just a handful of Middle Eastern oil firms that have started building an E&P portfolio in the contintent, and others still are involved in the downstream and power sectors. Most recently, Saudi Arabia and South Africa announced a mega deal with the Saudi kingdom looking to build an oil refinery and a petrochemical plant in the African country. The possibility of Saudi Aramco using South African oil tanks in Saldanha to store its crude oil also exists.

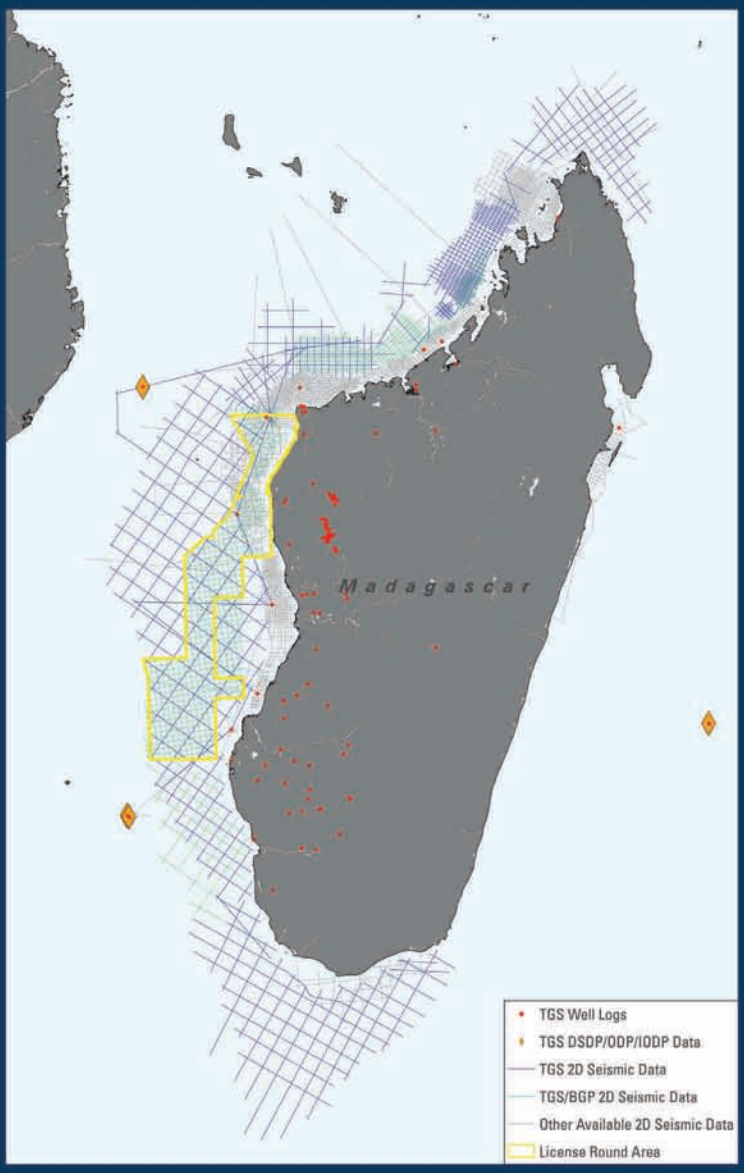
Now that seven of the 14 OPEC members are African nations, it seems likely that increased cooperation will be seen, perhaps resulting in even greater investments into Africa by the Middle Eastern members. This new trend is not limited to OPEC members however, other non-OPEC Middle Eastern companies (and governments) are seeing the synergies and benefits of partnering with, and investing in, the African continent's energy sector.

Egypt and Tanzania share the spotlight in this issue's Africa Focus section. With both countries working to develop and monetize their considerable natural gas resources, key project updates are provided. Be sure not to miss the Technology & Solutions feature where GeoLog International takes a look at combining mud logging with reservoir geochemistry for better reservoir characterization in real time. Local Impact features the partnership between Remote Operations International and Tullow Oil to ensure that the healthcare needs of its workforce are met at its Kenyan operations. As always, your comments and suggestions are welcome and can be sent to *info@petroleumafrica.com*.

Dianne Sutherland
Chief Editor

Explore Madagascar's open acreage

Let the bidding commence!



OMNIS, in partnership with TGS and BGP, are pleased to announce the opening of a Madagascar 2018-2019 Licensing Round.

Exploration in Madagascar began in the early 1900s with the discovery of hydrocarbon-rich sedimentary basins in the west, including the Tsimiroro heavy oil field and the Bemolanga tar sands. In spite of more than 100 years of exploration, the offshore of this frontier region remains largely under-explored. The Island shares a maritime boundary with Mozambique, a hydrocarbon province where large quantities of natural gas have been discovered.

Studies conducted on new data, in collaboration with TGS and BGP, suggest there is significant potential for future discoveries offshore.

Highlights:

- **Blocks:** 44 offshore blocks in the Morondava Basin, located on the western margin of Madagascar
- **Timing:** The Licensing Round will run from 7 November 2018 until 30 May 2019
- **Data access:** Existing seismic, gravity/magnetic and well data will be available for viewing via physical data rooms held at the TGS offices, in London and Houston; data packages will also be made available for clients

For more information:

info@madagascarlicensinground2018.com
www.madagascarlicensinground2018.com

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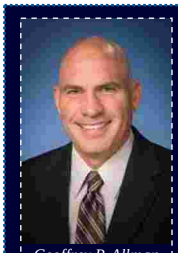
MOVING ON


Wael Sawan

Royal Dutch Shell plans to appoint Neil Carson as a director of the company at its 2019 Annual General Meeting. The appointment will be effective June 1. The company also appointed Wael Sawan as upstream director, effective July 1.

MX Oil retained the services of Wim Burgers as a consultant. Burgers has more than four decades of international exploration and production experience as a geologist and geophysicist.

Aqualis Offshore has appointed Simon Healy as general manager to head up its Australian operations. Healy is a highly experienced master mariner who has held senior positions with Swire Pacific Offshore and ran offices in Singapore, Middle East (Doha), West Africa (Douala) and Australia.


Geoffrey P. Allman

Lincoln Electric Holdings, Inc. appointed Geoffrey P. Allman to serve as senior VP, Strategy & Business Development, effective immediately. Allman began his career at Lincoln Electric in 1997 and has held various positions of increasing responsibility in Internal Audit, Accounting, and Finance.

Chevron named Pierre Breber VP and CFO, effective April 1, 2019. Breber replaces Patricia Yarrington who has elected to retire after 38 years of service with the company. In related moves, Mark Nelson, currently VP Midstream, Strategy & Planning, will succeed Breber as executive VP of Downstream and Chemicals. Colin Parfitt, currently president of Supply & Trading, will become VP of Midstream. Both appointments are effective March 1, 2019.

Ryan Lumsden has been appointed business development manager of Saab Seaeye. He has wide experience in the underwater vehicle market and will join the company's sales and marketing team.

ExxonMobil launched a reorganization, streamlining its upstream organization and made a few appointments to run the new companies. Liam Mallon, currently president of ExxonMobil Development Co., will become president of ExxonMobil Upstream Oil & Gas Co. Steve Greenlee, currently president of ExxonMobil Exploration Co., will become president of ExxonMobil Upstream Business Development Co. Linda DuCharme, currently president of ExxonMobil Global Services Co, will become president of ExxonMobil Upstream Integrated Solutions Co. Neil Duffin, currently president of ExxonMobil Production Co., will become president of ExxonMobil Global Projects Co.

King & Spalding has recruited project finance specialist Robin Bayley as a partner in the firm's Corporate, Finance & Investments practice based in Abu Dhabi. Bayley represents sponsors, developers and financial institutions on complex, multi-sourced financings of large energy and infrastructure projects throughout the Middle East and Africa.


Raul Gonzalo

ProSep named Raul Gonzalo as its new regional sales and service manager in the Middle East. ProSep also announced that Ryan McPherson is moving to EIC as Middle East director.

Wintershall made some changes in leadership in the Middle East, appointing Helge Beuthan, currently VP for Global Subsurface Evaluation, to take over the duties of Dr. Uwe Salge in Abu Dhabi. Beuthan took over on February 1. Salge will return to Wintershall in Kassel, where he will take over Beuthan's area of responsibility.

Lee Tillman has been appointed Marathon Oil Corp.'s chairman effective February 1. Tillman will continue to serve as president and CEO, a position he has held since 2013. He succeeds Dennis Reilley, who has elected to retire after nearly six years as chairman and more than 17 years on the Marathon Oil board of directors. The company also announced that the board has appointed Gregory Boyce as its lead independent director, effective February 1. Boyce has been a director of the company since 2008.

Brendan Warn was appointed senior VP, Investor Relations of Total, effective January 1, 2019. He succeeds Mike Sangster. Prior to joining Total, Warn was managing director and UK Head of Equity Research at BMO Capital Markets in London.

ICR Integrity (ICR) appointed a new COO and CFO to support the business with its international growth strategy. Richard Wilson joins ICR in the newly-created role as COO, utilizing three decades of operational and commercial experience in the oil and gas industry. The new CFO, Alan McQuade, joins ICR after previously serving as CFO at two Acteon Group operating companies.

Xodus Group strengthened its social performance capabilities with the appointment of Karen Nash as its social impact specialist. Throughout her career Nash has worked across the world, including Africa, Latin America, Southeast Asia and Central Europe.


Mel Shah

dmg events appointed Mel Shah as vice president of its Energy Sector, Asia. Shah will grow the company's energy events in Asia. Shah's two decades of experience span the energy, digital, manufacturing, food and hospitality sectors in Asia.

Halliburton's board of directors has appointed Jeff Miller, the company's president and CEO, as chairman of the board. The appointment was effective January 1, 2019. Consistent with the company's corporate governance guidelines, Executive Chairman Dave Lesar retired on December 31, 2018. Robert A. Malone will continue as lead independent director of the Halliburton board of directors.


Matt Hopkinson

Element Materials Technology (Element) appointed Matt Hopkinson as its new executive VP for the Oil & Gas and Infrastructure sector. Hopkins joins Element from Bureau Veritas where he most recently served as VP. Commodities. He assumed his position on January 1 and replaces Dr. Rod Martin who has taken on the role of VP, Technology for the Oil & Gas and Infrastructure sector.

World Bank Group President Jim Yong Kim stepped down from his position on February 1. Kristalina Georgieva, the World Bank's CEO, assumed the role of interim president until a new president is appointed.

Neil Levett is joining the JLA Media team as lead consultant for its newly-established Oil & Gas division, taking responsibility for a fast-growing part of the organization's PR and communications activities.

To include a corporate personnel announcement in Moving On, write to *info@petroleumafrica.com*. Preference will be given to Africa-specific appointments and to those companies who have interests within the continent; all others will be included on a space available basis.

SDX Receives Development Approval for South Disouq

SDX Energy saw its development lease application for the South Disouq concession in Egypt approved by authorities. Construction of a pipeline and central facility have already started. First production from the license remains on track to start towards the end of H1 2019, with SDX expecting to achieve a gross plateau production rate of conventional natural gas of between 50-60 MMscf/d.

The 170 sq km 3D seismic acquisition program at South Disouq is 50% complete and is expected to conclude in February. The seismic data will then be processed and interpreted by the end of Q3 2019, with drilling on the license set to resume shortly thereafter.

Egina Comes Onstream

Production has started from Nigeria's latest development. Total, the operator of the development, brought the Egina field on to production at the end of 2018. At plateau the Egina is expected to produce 200,000 bpd.

The FPSO used to develop the giant Egina field is the largest one Total has ever built. This project involved a record level of local contractors. Six of the 18 modules on the FPSO were built and integrated locally, and 77% of hours spent on the project were worked locally.

Source: Total

Startup has been achieved close to 10% below the initial budget, which represents more than $1 billion in capex savings, due in particular to excellent drilling performance where the drilling time per well has been reduced by 30%.

The Egina field is the second development in production on OML 130 following the Akpo field, which started-up in 2009. The Preowei field is another large discovery made on this prolific block for which an investment decision is scheduled to be taken this year.

NOC and Sonatrach Talk Budgets

National Oil Corporation (NOC) and Sonatrach, the state-run firms of Libya and Algeria, respectively, met to discuss joint activities and balance sheets for 2018 for Blocks 65 and 95/96 in the Ghadames Basin. The budget for 2019 covering the two blocks was also part of the discussion.

The parties also discussed a report evaluating the reservoir capacity for Block 95/96, and the release of drilling rig TP215, following completion of the drilling of well 02-96 1A.

Further, the committee discussed the evaluation and development of Block 65 through its association with Arabian Gulf Oil Company's (AGOCO) Hamada fields.

Ororo-2 Spud Date Still Flexible

Sirius Petroleum should be able to launch its planned drilling program in Nigeria in the near future. The company was recently advised by Shelf Drilling that the *Adriatic-1* jack-up rig is currently completing the last of its pre-existing contracts with another operator.

The rig is at this time stationed on a block adjacent to Sirius' Ororo field on OML 95. The timing for the spudding of the Ororo-2 well is dependent on the final completion of the previous contract. Sirius said it will not have a definitive time for the spud until Shelf Drilling notifies it of the mobilization of the rig to the Ororo-2 location.

Libya Aims to Double Production

Despite security issues disrupting production occasionally, Libya is still set on its production goals. The government aims to more than double its oil flows over the next two years.

Mustafa Sanalla, chairman of NOC, said that the country is looking to hit 2.1 million bpd by 2021, provided security and stability are strengthened in the North African country. Currently Libya produces 953,000 bpd, Sanalla said at a news conference in Benghazi.

At the press conference Sanalla reiterated calls for workers' security to be improved to allow production to resume at the Sharara oil field, which was taken over on December 8 by tribesmen, armed protesters and state guards demanding salary payments and development funds.

Sanalla also confirmed the upcoming return of BP to Libya along with Russian companies, without giving further details. Improved security conditions in the Sirte Basin in central Libya will also enable the launch of production at the Farigh gas field at 24 Mmcf/d output goal of 270 Mmcf/d, Sanalla added.

Production Added from Angola's Block 15/06

Angola saw new production added to its totals when ENI launched a new production well on its Vandumbu field. The well is located offshore the southern African country on the West Hub of Block 15/06.

Source: ENI

The start-up of the VAN-102 well, which follows the start-up of ENI's second subsea multiphase boosting system (SMBS), took place through the *N'Goma FPSO*. The well, on start-up, achieved an initial rate of 13,000 bpd.

The VAN-102 is a further step in the development of the Vandumbu field, launched on November 29, three months ahead of schedule, and which will be completed in Q1 2019 with the start-up of the water injection well. This, together with the start-up of another production well in the Mpungi field, will bring the production of Block 15/06 to a total of about 170,000 boepd, further extending the production plateau.

SPDC Takes FID on Assa North

Nigeria's Assa North Gas Development Project saw Shell take the final investment decision (FID) on the project recently. The FID adds to government enthusiasm toward its domestic gas aspirations for increased power generation and industrialization.

The Assa North is expected to produce around 300 Mmcf/d at its peak production levels. The gas produced will be treated at Shell Petroleum Development Company's (SPDC) Gas Processing Facility and distributed through the Obiafu-Obrikom-Oben pipeline network.

The Managing Director of SPDC and Country Chair, Shell Companies in Nigeria, Osagie Okunbor, disclosed that the project would be a major game-changer in Nigeria's quest for energy sufficiency and economic growth.

Recently the Shell subsidiary signed a gas supply and aggregation agreement with Geometric Power Aba Limited (GPAL) for the supply of about 43 Mmcf/d to support the 140 MW Aba Integrated Power Plant at Ossisioma in Abia State.

By the agreement, SPDC will supply gas from the SPDC JV gas plant to the power producer, GPAL, via a gas pipeline network which is already installed.

Waha Adds Faregh Field to Libyan Totals

Waha Oil Company, a NOC subsidiary, completed preparations on another horizontal well in the Faregh field ahead of the planned start of second-phase experimental gas production. Waha is expected to start the second-phase of experimental gas production at the end of Q1 but was able to move the date forward by almost two months.

Source: Jandp Group

Faregh field

According to NOC, the initial tests indicate that the B B-14-59 well is expected to produce up to 24 Mmcf/d of gas, and 1,500 bpd of condensate. This well is in addition to the expected 33 Mmcf/d of gas, and 1,400 bpd of condensate production capacity of well B B-10-59, completed in November 2018.

NOC chairman, Mustafa Sanalla thanked staff dedicated to this project and underlined the importance of a refocused Faregh field to provide gas for local community use, and the fostering of further regional economic development.

ENI to Complete 14th Zohr Well

ENI expected to complete the drilling of its fourteent well on Egypt's Zohr natural gas field by late January, early February. This well will increase the number of producing wells on the field to 10. The well is expected to immediately be put onto production once complete.

The company will start evaluating the field's production to estimate the number of wells to be drilled in the second phase of Zohr field's project. ENI is looking to boost production rates to 2.7 Bcf/d of natural gas by the end of the year with further gains in the future planned.

Eland Completes Gbetiokun-3 Appraisal & Development Well

Through its joint-venture subsidiary, Elcrest Exploration and Production Nigeria, Eland Oil & Gas has completed drilling phase of the Gbetiokun-3 appraisal and development well in Nigeria.

The OES Teamwork Rig has successfully completed drilling the Gbetiokun-3 well as part of the initial phase of the field development. The well encountered oil-bearing reservoirs across multiple horizons and will be completed as a dual producer on the D9000 and E4000 reservoirs, which have total net pay thicknesses of approximately 46 feet and 44 feet true vertical depth respectively. The secondary target reservoir, E7000, was encountered slightly deeper than expected and consequently the decision has been taken to complete this well on the E4000 reservoir.

The E7000 is currently being reassessed with a view to being targeted by future wells. Downhole samples collected from the D5000 established that the shallow reservoir oil is mobile and pressure volume temperature analysis will be performed on the sample to confirm the D5000 can be developed commercially.

Production testing of the Gbetiokun-1 and Gbetiokun-3 wells will be conducted using an early production system (EPS) with initial estimated gross combined production at approximately 15,000 barrels of oil per day (bopd) (6,750 bopd net to Elcrest). Start-up of the EPS is expected to be during Q1 2019.

Total to Greenlight Ikike Project in Nigeria

Total's CEO, Patrick Pouyanne, revealed that the French firm would approve plans to move forward with the Ikike project in Nigeria in H1. The Ikike project would add around 60,000 bpd to Nigeria's totals and is just one of several projects Total plans to take the FID on in Nigeria.

"There is a huge potential in Nigeria, it is probably the most prolific country in west Africa in terms of oil and gas and it is time to launch new projects and we are working on many of them," Pouyanne told journalists.

The company could also take a FID on the deepwater Preowi project which would add another 70,000 bpd to Total's production totals in the West African country.

SDX's South Ramadan Well Hits Pay

SDX Energy saw its SRM-3 well on Egypt's South Ramadan concession reach its targeted depth. The company said in a recent release that the well was drilled to a depth of 15,635 ft and encountered 75 ft of net conventional oil pay in the Matulla section.

According to SDX, who holds a 12.75% stake in the concession, drilling also encountered 20 ft of net conventional oil pay in the Brown Limestone formation and a further 15 ft of net conventional oil pay in the Sudr section. The well will be completed in the Matulla section and then tested to establish whether the well will flow at a commercial rate.

South Sudan Signs New Cooperation Agreement with Nigeria

South Sudan and Nigeria signed a cooperation agreement on oil and gas, trade, education, health and culture, among others. Nigeria's Foreign Affairs Minister, Geoffrey Onyeama, and his South Sudanese counterpart, Nhial Deng Nhial, signed the agreement in Abuja.

According to Onyeama, the agreement is hoped to be a framework that will enhance their deep relationship. Though the agreement did not include security provisions, Onyeama said Nigeria would continue supporting South Sudan's peace and stability efforts.

"For us, we believe it will be a win-win for the two countries to have meaningful and profitable cooperation," he said. "We believe we can achieve greater things economically, socially and to really push for greater engagement between our two countries," he added.

Rockhopper Updates Egypt

Rockhopper Exploration reported that current production from the Abu Sennan concession is approximately 3,800 boepd, broadly in line with average production rates throughout 2018.

The Al Jahraa-10 well, during Q4, reached total depth in the Abu Roash-F formation. Oil pay was calculated in the Abu Roash-C and Abu Roash-D levels. Following testing operations, the well was brought into production from Abu Roash-C at a rate of 130 bpd gross, and subject to further increase. Upside potential exists in Abu Roash-D which is being evaluated for possible acid stimulation.

Exploration well ASZ-1X located on Prospect S was spudded on November 8 and was the first of

two commitment wells to be drilled in the first phase of the new concession. An oil discovery was made in the Abu Roash-C level with preparations underway to test and produce. The operator has applied to EGPC for a development lease over the discovery.

Following joint venture approval, an active drilling program has been agreed for 2019 including the drilling of one exploration well, two development wells and a water injection well. Activity in 2019 continues to target the Al Jahraa field, as well as further exploration within the concession. Drilling is expected to commence in Q1.

The company also revealed that it is continuing to see an improvement in the payment situation in Egypt. At the end of 2018, Rockhopper's EGPC receivable balance was approximately $1.5 million.

Sonangol Out as National Concessionaire

The moves by the Angolan government to replace state-run oil and gas firm Sonangol as the country's concessionaire have borne fruit. As part of the country's ongoing petroleum sector reform, President João Lourenco created, by means of Presidential Decree 49/19, of February 6, 2019, the National Petroleum, Gas and Biofuels Agency (*Agência Nacional de Petróleo, Gás e Biocombustíveis, or ANPG*).

The decree makes ANPG the National Concessionaire for the petroleum sector, thus replacing the role played by Sonangol EP. This change implied the amendment of Sonangol EP's by-laws, as approved by means of Presidential Decree No. 15/19, of January 9, 2019.

The ANPG, in the capacity of National Concessionaire for the petroleum sector, is granted the authority to award and manage oil and natural gas contracts; prepare public announcements and promote biddings for the award of exploration, development and production rights, as well as negotiate and execute the relevant contracts. In addition, it will review and issue opinion on the transfer to third parties of more than 50% of the share capital of an associate of the National Concessionaire; audit the activities of oil operators, with a view to assess the risks and verify the technical, financial, legal and accounting compliance; and monitor all activities conducted under hydrocarbon exploration and production contracts.

LNA Takes Over El Sharara Field

In Libya, forces loyal to the Libyan commander in the East, Khalifa Haftar, have captured the El Sharara oilfield. Haftar Libyan National Army (LNA) forces took over the facility from armed tribesmen and state guards. The LNA said it had met no resistance.

The LNA called on state-run oil firm, NOC, to lift the force majeure that was placed on the field when it shut in production at the 315,000 bpd field.

The oilfield was taken over by groups of tribesmen, armed protesters and state guards demanding salary payments and development funds almost two months ago. In January, Haftar's forces started an offensive in the south to fight militants and secure its oilfields, and said it had made good on the promise by moving on the El Sharara field. "Our forces arrived safely at the field," a spokesman for the forces, Ahmed Mismari, told a news conference.

NOC operates Sharara in partnership with Repsol, Total, OMV and Equinor. According to a Twitter post by OMV, the field could reopen in March.

Brulpadda-1AX Spuds Offshore South Africa

Africa Energy Corp. saw the spud of the Brulpadda-1AX re-entry well on Block 11B/12B offshore South Africa. The Brulpadda-1AX exploration well is being drilled in 1,432 meters water depth by the *Odfjell Deepsea Stavanger* semi-submersible rig to a total depth of 3,420 meters subsea.

Source: Africa Energy Corp

Deepsea Stavanger

Garrett Soden, Africa Energy's President and CEO, commented, "The Brulpadda-1AX exploration well is a world-class, basin-opening opportunity in one of the last under-explored regions offshore Africa. We look forward to drilling results in the first quarter of 2019."

Block 11B/12B is located in the Outeniqua Basin approximately 175 kms off the southern coast of South Africa. The area has a proven petroleum system from the nearby Sable and Oryx oil fields. The Brulpadda Prospect is one of five similar submarine fan prospects with direct hydrocarbon indicators defined utilizing 2D seismic surveys acquired across the Paddavissie Fairway in 2001 and 2005. The Brulpadda Prospect has gross prospective resources of more than 500 million barrels with significant follow-on potential in the success case.

The well will test the oil potential in a mid-Cretaceous aged deep marine fan sandstone system within combined stratigraphic/structural closure. Drilling and evaluation of the well is expected to take approximately 85 days with a gross budget of approximately $154 million, including contingency for downtime due to weather.

Africa Energy holds a 4.9% effective interest in Block 11B/12B, through its 49% of the shares in Main Street 1549 Proprietary Ltd, which has a 10% participating interest in Block 11B/12B. Total SA is operator and has a 45% interest in Block 11B/12B, while Qatar Petroleum and Canadian Natural Resources Ltd have 25% and 20% interests, respectively.

Ghana Bid Round Generates Interest

Ghana's Ministry of Energy revealed that it has received applications from 16 oil and gas companies for one or more of five offshore blocks offered in its first exploration licensing round. The companies include Aker Energy, BP, Cairn, CNOOC, ENI, Equinor, ExxonMobil, First E&P, Global Petroleum Group, Harmony Oil and Gas, Kosmos Energy, Qatar Petroleum, Sasol, Total, Tullow and Vitol.

The Ministry says the applications include expressions of interest in competitive bidding for three blocks in the Western Basin and for direct negotiations regarding another two blocks offshore Ghana.

Ghana sees the interest as a major vote of confidence in the country, which seeks to unlock more resources than its current production of 200,000 bpd of oil including the Jubilee Field's 100,000 bpd.

VOG Receives Presidential Decree for the Matanda PSC

Victoria Oil & Gas' (VOG) wholly owned subsidiary, Gaz du Cameroun, (GDC), received the Presidential Decree authorizing the transfer of interest in the Matanda PSC license assigned from Glencore in early-2016. Cameroon's President Paul Biya signed the decree on December 17.

The terms of the assignment include the transfer by Glencore of 75% of its participating interest in the PSC to GDC and 15% of its participating interest to AFEX, who previously held a 10% interest. Cameroon's state-run oil and gas firm, SNH, has a 25% back in right after an exploitation license is granted.

As consideration for the assignment, GDC will become operator and will assume responsibility for carrying out the Work Program agreed to with the government. The agreed obligation for this work program is one exploration and appraisal well plus reprocessing of existing seismic in the first two-year period of the PSC.

Matanda covers an area of approximately 1,235 sq km and is highly prospective for natural gas and gas condensate. It contains the previously discovered offshore North Matanda Field with current 2C recoverable gas resources of 150 Bcf Gross and 6 million barrels of condensate and upside of 1 Tcf of gas. In addition, there are further onshore prospective resources of 1,303 Bcf of gas contained in 23 identified prospects and leads.

GDC and AFEX will focus on the onshore prospects located adjacent to the Logbaba concession. The close proximity of the existing Logbaba gas pipeline network will also allow for new discoveries on Matanda to deliver additional natural gas to industrial users in Cameroon.

Preliminary Results on Tendrara Well Positive

Sound Energy saw positive preliminary results of intermediate wireline logs on its TE-10 well in Morocco. The initial results indicate the presence of gas bearing sands in the TAGI.

Sound is currently part way through its three-well exploration program on the Tendrara Area. The drilling program is designed to explore three geologically-independent plays and to establish the potential of the basin. The TE-10, the second well in the program, was designed to target both a material TAGI stratigraphic trap and a smaller TAGI structural closure in the company's Greater Tendrara permit.

The well is located about 25 kms to the northeast of the recently awarded Tendrara production concession, which contains the TE-5 Horst discovery unlocked by Sound Energy in 2016-17.

The TE-10 well has, so far, been drilled to 2,098.5 meters total measured depth, penetrating the top of the TAGI sand sequence at a measured depth (MD) of approximately 1,892 meters.

Based on cuttings and the results of preliminary wireline interpretation, there is a potential gross reservoir interval from 1,899 meters MD to 2,009 meters MD. After completion of the intermediate logging program, Sound plans to drill the remaining TAGI section to total depth just beneath the Hercynian Unconformity and then perform a well test, including possible mechanical stimulation. The company will also initiate seismic analysis to establish the internal estimated gas resources of the structural closure and the upside potential of the North East Lakbir stratigraphic trap.

Ground works for the drilling of the third well in the exploration program, the TE-11, are expected to commence after the TE-10 well test.

Gabon Makes List of Top 10 Discovered Resources

Although it is still early in the new year, numbers are being calculated in the industry to rank 2018's standing for oil and gas exploration successes around the world. The lone African country making the list has a long history of oil production

but is currently on the downward trend as its crude resources deplete.

Gabon came in as the country with the ninth biggest resources discovered in 2018. According to Rystad, Gabon had 203 million boe in discovered resources. Over 2018 the most notable discoveries for Gabon were made by Petronas, Repsol, and BW Offshore.

Petronas hit in early 2018 with the drilling of the Boudji-1 exploration well on the Likuale Block. The well encountered both oil and gas while drilling. The ultra-deepwater exploration well, drilled in water depths of 2,800 meters, encountered 90 meters of gross high-quality hydrocarbon-bearing pre-salt sands. Repsol hit with the drilling of the Ivela-1 exploration well in the Lower Congo Basin, in the Luna Muetse (E13) Block. Repsol, partnered with Woodside, hit when they intersected a 78-meter gross oil column while drilling.

BW Offshore made multiple discoveries over 2018 on the Dussafu License's Tortue field. The company hit with the DTM-3, DTM-3H, and the DRNEM-1 appraisal well. The well encountered 40 meters of pay in the Gamba and Dentale formations in the original wellbore. An appraisal side-track was drilled approximately 800 meters north-west of the original wellbore and encountered 34 meters of pay in the Gamba and Dentale formation.

For more information on the global exploration findings for 2018, see *Global Exploration Rebounds Over 2018* in the Around World section.

Equa G Denies Ophir the Fortuna Extension

Unfortunately for Ophir Energy, it received notification from the Equatorial Guinea Ministry of Mines and Hydrocarbons that the Block R License, which contains the Fortuna gas discovery, will not be extended. The license expired on December 31, 2018.

As a consequence, there will be an additional non-cash impairment of the asset, expected to be around $300 million, in Ophir's full year financial results following the impairment taken in the half year results reported in September 2018.

According to the company, it remains focused on implementing the strategy outlined in its announcement on September 13 and options available to maximize value for shareholders. In this regard, the Board would highlight the recent updates it has provided to the market in respect of its Southeast Asia holdings, which it believes demonstrate the underlying quality of these assets, including its recent acquisition of Santos.

Ophir and Medco have entered into discussions about a possible cash offer to be made by Medco for the entire issued and to be issued share capital of Ophir. Discussions with Medco have taken place in the shared knowledge that there were a number of potential outcomes with respect to our Fortuna asset, and these discussions continue.

Alan Booth, Interim CEO of Ophir, commented, "It is disappointing that the Ministry has decided not to extend the license, despite the amount of effort and cost dedicated to the delivery of the project and especially as we were still talking to highly credible potential co-investors. Nevertheless, we will continue to work constructively with the authorities in Equatorial Guinea. I should like to thank everyone in the Ophir project team; you gave this your very best endeavors.

"Looking ahead, the Group's cashflow, capital commitments and growth prospects will be focused in Southeast Asia, where we have built a robust operating platform capable of delivering value to shareholders."

Trendsetter Engineering Scores West Africa Contract

Trendsetter Engineering will deliver three template slot adapters (TSA) and associated TCS connectors to a major operator in West Africa. The equipment will be delivered this quarter from Trendsetter's Houston facility.

By utilizing the TSA the operator will be able to reconfigure the template and associated manifold slots to allow for the tie-in of satellite trees without removing existing wellhead systems or production guide bases

According to Trendsetter, this technology provides the flexibility to add new wells, ultimately eliminating the need for specialized tooling and significantly reducing the vessel time necessary to complete the tie-ins that are traditionally required to connect the template to a satellite well.

Under the contract the company's scope of the work includes the design and manufacture of the TSAs, Trendsetter's TC7 Clamp Connection Systems, and TC2 Collet Connection Systems.

Anglo African Updates Tilapia Drilling

Anglo African Oil & Gas updated drilling on the Tilapia field in the Republic of Congo (ROC). On commencing drilling of TLP-103, TLP-101, which was producing around 30 bpd at the time, had to be taken offline due to the proximity of the flare to the drilling apparatus. The company has now upgraded and relocated the flare to enable production from TLP-101 to continue during drilling. TLP-101 has been brought back into production and has now produced an average of 55 bpd during a two-week test period.

Source: Anglo Africa Oil & Gas

During the downtime, Anglo African engaged a specialist reservoir engineering company to conduct a full review of wells TLP-101 and TLP-102 which followed on from the stimulation exercise performed on well TLP-102, successfully conducted earlier in 2018. The results of these studies have shown connectivity between the two wells. Due to this connectivity the reservoir engineering company has recommended using TLP-102 as a water injector to enhance production from TLP-101.

Studies of this strategy by both AAOG and the specialist reservoir engineering company predict that using a water injection system could lead to a rise in production from TLP-101 to up to 400 bpd. It is now obtaining estimates for the cost of this work and assessing the commercial viability of this project.

UAE to Participate in Namibian Oil and Gas

Namibia reached an agreement with the UAE to boost relations in the oil and gas sector. The oil and gas agreement came as the two countries met to discuss ways to strengthen cooperation.

During a meeting between Abu Dhabi Crown Prince Sheikh Mohammed bin Zayed Al Nahyan and Namibian President Hage Geingob, bilateral relations between the two countries were addressed. During the cooperation talks, the Emirati crown prince affirmed his commitment to begin exploring for oil and gas in Namibia. It comes after the two countries built up strong

ties through the Al-Dahra Namibia project a decade ago.

Wireline Logging Confirms Tilapia Discoveries

Schlumberger completed wireline logging on Anglo African Oil & Gas' (AAOG) TLP-103C well on the Tilapia field in the Republic of Congo. The wireline logging confirmed multiple discoveries on the Tilapia license.

AAOG said that the wireline logging validates the initial results identified during drilling the targeted R1/R2/R3 and the Mengo reservoirs and confirms oil columns amounting to an aggregate of 44 meters across the identified horizons.

The company will now resume drilling operations at TLP-103C, targeting the deeper Djeno horizon which is known to be a prolific producer on neighboring fields.

Unity Wells Back Online

South Sudan is in the midst of reviving its oil production and has restarted production in the Unity region. According to a Bloomberg News report, 16 wells have been restarted. The 16 wells had been shut in since 2013.

These wells were brought back online thanks to the joint efforts by the two Sudan's efforts to secure facilities. The sector is vital to both Sudan's economies; South Sudanese production passes through pipelines on Sudanese territory and Khartoum draws significant transit costs.

South Sudan produces about 150,000 bpd and aims to double that capacity by the end of this year.

Cameroon Greenlights Bolongo License

Cameroon approved the alliance between Glencore and state-run firm SNH, for the exploitation of the Bolongo block in the Rio del Rey Basin. The license, in which Glencore holds 75% stake, was given the greenlight by the government through presidential decree on January 8. The license is valid for 20 years and renewable for one period of 10 years.

Glencore had submitted an application for the exploitation of hydrocarbons on this block to the Cameroonian authorities in June 2017. This came after a long exploration phase and a PSC signed with SNH in 2009.

Pecan-4A Nears Completion

Aker Energy, operator of Ghana's Deepwater Tano Cape Three Points (DWT/CTP) block, is about to complete a successful drilling operation of the Pecan-4A appraisal well. The well was drilled at the Pecan field in the DWT/CTP block to a vertical depth of 4,870 meters in 2,667 meters of water.

The DWT/CTP block offshore Ghana contains seven discoveries, of which Pecan is the main discovery to date. The main purpose of the Pecan-4A appraisal well was to confirm Aker Energy's understanding of the geology in the area and to identify deep oil water contact in the Pecan reservoir. This was successfully proven.

According to Aker, based on existing subsurface data from seismic, wells drilled and an analysis of the Pecan-4A well result, the existing discoveries are estimated to contain gross contingent resources (2C) of 450 – 550 million boe. Aker Energy estimates that with the next two appraisal wells to be drilled, the total volumes to be included in a Plan of Development (POD) have the potential to increase to between 600 – 1,000 million boe. In addition, there are identified multiple well targets to be drilled as part of a greater area development after submission of the POD.

Genel Completes Seismic in Africa

Genel Energy issued an update on its ongoing activities in Africa, specifically onshore Somaliland and offshore Morocco. In Somaliland on the SL-10-B/13 block, where Genel holds a 75% stake and is operator, the company completed seismic processing. Genel said that analysis and interpretation are underway.

Initial indications confirm Genel's view that the block has hydrocarbon potential. Genel continues to develop a prospect inventory and assess next steps ahead of a farm-out process and potentially spudding a well in 2020. On the Odewayne block, further seismic processing is being considered in order to complete the company's understanding of the prospectivity of the block.

On the Sidi Moussa block offshore Morocco, the acquisition of around 3,500 sq km of multi-azimuth broadband 3D seismic completed in November. PSTM and PSDM processing will continue through 2019. Genel has no additional work commitments relating to the license. A decision will be made on whether to drill a well, and the appropriate equity level, once processing has progressed sufficiently.

Tlou Recommences Drilling at Lesedi

Tlou Energy has recommenced production pod drilling on its Lesedi CBM project in Botswana and specialist directional drilling crew and other key personnel are now on site.

Following the drilling of the lateral wells, the Lesedi 3 and Lesedi 4 production pods will be completed prior to the installation of surface production facilities. Dewatering and production testing can then begin. According to the company, it is successfully flowing gas at Lesedi 3 & 4 and has the potential to upgrade its reserves.

A comprehensive tender was recently submitted as a response to a Request for Proposal (RFP) for supply of CBM (for gas-to-power) to the government of Botswana. Discussions with other potential off-takers as well as development finance providers is in progress. An Environmental Impact Assessment for the power generation facility as well as the transmission lines to connect to the electricity grid has also now been submitted.

Airborne Oil & Gas Scores Total Contract

Airborne Oil & Gas was awarded a contract from French major Total to supply a TCP (Thermoplastic Composite Pipe) Jumper for a deepwater project in West Africa. The field is located approximately 150 km offshore in water depths of up to 1,600 meters.

Source: Airborne Oil & Gas

The Airborne Oil & Gas TCP Jumper for Total being spooled

This contract follows the successful completion of a rigorous testing program, in which Total qualified Airborne Oil & Gas' TCP Water Injection Jumper for permanent subsea applications.

Under this contract, Airborne Oil & Gas will provide Total with a 5.2" ID, 370 bar design pressure TCP Jumper for water injection. The TCP Jumper is intended to be terminated in country and installed using a subsea pallet, deployed from a small vessel. The TCP Jumper is non-corrosive, lightweight, flexible, spoolable with a small minimum bend radius and can be terminated at any location along the pipe. This provides the end user with project value in lower total installed cost through cost effective transportation, and removing the need for metrology, while de-risking the project schedule.

TEN and Jubilee Field Update

Tullow Oil and its partners in Ghana on the Jubilee field saw their 2018 production from the field average 78,000 bpd. This was slightly below Tullow's November forecast.

Tullow said in its latest update that missing its November forecast was due to minor operational issues in December, which have now been resolved. Tullow expects 2019 average gross oil production from the Jubilee field to increase to around 96,000 bpd.

On Ghana's TEN fields, Tullow said the fields performed well throughout 2018 with gross production averaging 64,500 bpd, in line with expectations. Tullow expects gross oil production from the TEN fields in 2019 to step up significantly to around 83,000 bpd and gross gas production is expected to be around 2,100 boepd.

The partners' 2018 drilling program was successfully executed with two drilling rigs operating in tandem across both fields. The results from drilling were in line with, or exceeded, pre-drill expectations. Two new producer wells were drilled and completed at Jubilee and an existing water injection well was completed.

At TEN, two new producing wells and one water injection well were drilled. The first new producer well, NT05-P, was brought online in August 2018 and is performing very well. The second new producer, EN10-P, is currently being completed and is expected to be online in February.

In 2019, Tullow expects to drill and complete seven new wells across the TEN and Jubilee fields allowing gross oil production from Ghana to rise to approximately 180,000 bpd in line with the 2019 production forecast.

Uganda Partners Make Progress

Tullow Oil and its partners in Uganda, Total and CNOOC Ltd., continue to work with the government of Uganda to finalize the farm-down. According to Tullow, the farm down is expected to be complete in H1 2019.

The operators of the Uganda development continue to target FID for H1 of this year once agreements with the governments of Uganda and Tanzania have been completed.

Galp Ready for Namibia Survey

Galp Energia is set to start its 3D seismic campaign offshore Namibia imminently. The survey, to be shot on PEL 83, will cover a total area of 3,000 sq km. The company expects the survey to be complete in March. The seismic contractor is Polarcus UK Ltd.

The acreage is located in deepwater, in what is considered to be a frontier exploration basin, approximately 260 km from Lüderitz.

CGG Extending Multi-Client Footprint to Offshore Gabon

CGG is extending its Gabon multi-client data footprint. The company said it will conduct a 9,800 km long-offset 2D seismic survey in an unexplored deepwater area of the South Basin. This newest survey builds on the success of its 25,000 sq km 3D BroadSeis™ survey, which led to the recent Boudji-1 and Ivela-1 oil discoveries.

A subset of the data over the offered license blocks will be available in advance of Gabon's 12th offshore licensing round planned for June 2019.

The new 2D data will help define the full extent of existing and new plays in the region. It will also aid in understanding the thickness variations in the sediment overburden for source rock and maturity analysis. CGG's advanced broadband processing workflow will increase the resolution and improve the characterization of the turbidite systems that represent potential exploration targets. The low frequencies delivered will provide deep penetration to enhance understanding of the nature of the deep crust. New insights from this survey will expand and update CGG's current JumpStart™ integrated geoscience package.

Tunisia Expects Gas Boost

Tunisia plants to boost its natural gas production by the end of this year. According to the Tunisian Minister of Industry and Energy, Slim Feriani, gas production is expected to almost double this year, from 35,000 boepd to 65,000 boepd. This is due mainly to the highly anticipated Nawara gas project, operated by OMV, coming online.

"We will increase our production by about 30,000 boepd as soon as the Nawara project in the south of the country begins," Feriani said in interview with Reuters.

Among other things, Nawara will increase Tunisian gas production by 15% and reduce imports from Algeria by 30%. In addition to natural gas, it should open up to the production of condensate and LPG.

ROC Paints Positive Picture for New Licensing Round

Results from the Republic of Congo's (ROC) first licensing round, with the award of blocks to Kosmos Energy and Perenco, and the provisional attribution of a block to Total, present a positive backdrop for the country's second round which will close in June 2019, says GlobalData.

GlobalData's 'Republic of Congo Upstream Fiscal and Regulatory Report' explains that this second licensing round offering 18 blocks will be the second test for the new hydrocarbons framework, introduced over two years ago when the ROC adopted its new hydrocarbons code and production sharing model.

GlobalData says that regionally, the ROC presents relatively attractive contractual terms for oil and favorable terms for natural gas.

Alessandro Bacci, Oil and Gas Analyst at GlobalData, commented: "Much of the fiscal burden under new contracts is linked to negotiable terms and may therefore depend on the levels of investor interest. The results of the first round appear encouraging, though after the closing of the first licensing round, it took a long time to award the blocks to the IOCs. Additionally, five blocks on offer through the second licensing round were already unsuccessfully offered during the first round."

The report also notes that the country aims to increase the development of its gas sector. Specifically, promoting development through four avenues: gas to power (the only one implemented right now), gas to industry, petrochemicals projects, and gas export.

Bacci adds: "Although the new hydrocarbons code has improved gas terms, the passage of a new gas code is crucial to support such developments. Most gas projects are in the early design stages, and a clear government policy and regulatory environment will be needed to attract investment."

BP and SOCAR Sign Petchem HoA

BP and SOCAR Turkey signed a heads of agreement (HoA) to evaluate the creation of a JV that would build and operate a world-scale petrochemicals complex in Turkey. The proposed facility, to be located in Aliaga in western Turkey, would produce 1.25 million tons per annum (tpa) of purified terephthalic acid (PTA), 840,000 tpa paraxylene (PX), and 340,000 tpa benzene.

Following the signing of the HoA, BP and SOCAR Turkey now expect to undertake design work for the facility, which would allow for the integration of feedstock supplies from the nearby new STAR refinery and Petkim petrochemicals complex, both owned by SOCAR Turkey. BP and SOCAR expect to work towards a potential final investment decision in 2019, which could result in start-up of the new petrochemical plant in 2023.

BP's latest proprietary PTA technology has significantly lower capital and operating costs when compared with other PTA technologies. It is more energy efficient, uses less water and produces less solid waste than similar technologies on the market.

Area 4 Partners Secure Offtake Commitments

Mozambique's Area 4 co-venture participants have secured LNG offtake commitments from affiliated buyer entities of the partners. This is a key milestone that enables the participants to rapidly move toward an FID in 2019 on the first phase of the Rovuma LNG project. These commitments are subject to the conclusion of fully-termed agreements, and the approval of the government of Mozambique.

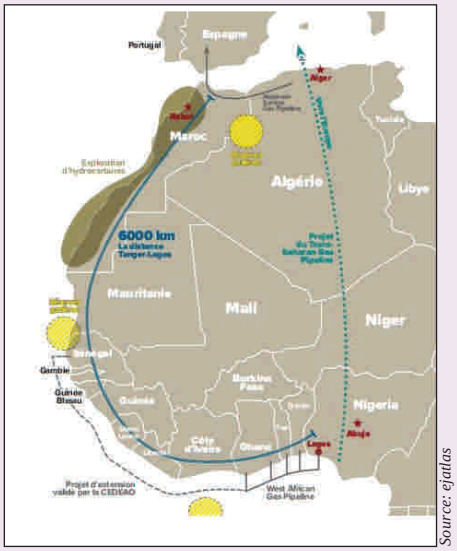
Area 4 participants are ExxonMobil, ENI, CNPC, Mozambique's state firm ENH, Kogas, and Galp.

In July 2018, Mozambique Rovuma Venture submitted the development plan to the government of Mozambique for the first phase of the Rovuma LNG project, which will produce, liquefy and market natural gas from the Mamba fields located in the Area 4 block offshore the Rovuma Basin. ExxonMobil will lead construction and operation of natural gas liquefaction and related facilities on behalf of the Area 4 joint venture, while ENI will lead the construction and operation of the upstream facilities.

The development plan for the first phase of the Rovuma LNG project specifies the proposed design and construction of two liquefied natural gas trains, which will each produce 7.6 million tons of LNG per year. Mozambique Rovuma Venture is currently holding productive discussions with the Mozambican government on development plan details.

Penspen Awarded FEED for Nigeria/Morocco Pipeline

Penspen was awarded a contract by Morocco's ONHYM and Nigeria's NNPC to execute the first phase of the FEED for an approximate 5,700-km gas pipeline proposed to run from Nigeria to Morocco. The work has already started and is being executed from Penspen's Abu Dhabi office. The award is a follow-up on the feasibility study completed by Penspen in July 2018.



Source: ejatlas

The FEED Phase I consists of a detailed review of the feasibility study results and in-depth evaluation of the gas demand and supply study. Further design of the pipeline system, in addition to the execution of an Environmental and Social Impact Assessment (ESIA), will then be carried out with the aim of optimizing the proposed pipeline route and project economics. Penspen will also support the client in marketing and promoting the pipeline project to potential stakeholders showcasing the wider benefits of its development.

At the end of the study, key detailed outcomes will help the client prepare for the second phase FEED Phase II, which is expected to lead to a final investment decision.

Penspen will be utilizing the skills and capabilities of Dar Al-Handasah, Crestech and Control Risk to conduct a number of specialty studies required for the FEED services, environmental impact assessment, Nigeria gas supply study and risk study respectively.

Saipem JV Contracted for Artic LNG Project

Saipem, in JV with Renaissance, was awarded a new Onshore E & C project in the Russian Federation worth €2.2 billion overall. The contract has been awarded by the company Artic LNG 2, consisting of Novatek JSPC (60%) and Ekropromstroy Ltd (40%).

The project will be executed in the Tazovsky District, in the autonomous administrative region of Yamal-Nenets, in the western part of the Gydan Peninsula.

The project encompasses the construction of three Liquefied Natural Gas (LNG) plants, each with a capacity of about 6.6 million tons per annum (MTPA), that will be installed on Concrete Gravity Based Structures (GBS) and includes LNG storage facilities totaling 687,000 m^3.

The works entrusted to the JV comprise the design and build of the three 30-meter high concrete gravity based structures (Concrete GBS) on a surface of 330 x 152 meters. These Concrete GBSs will be fabricated in two dry docks in a Novatek provided facility in Murmansk. Subsequently, they will be towed and installed in Gydan.

The contract forms part of a strategic partnership agreement signed by Saipem and Novatek in 2016 for activities associated with LNG projects.

Ghana Prepares to Transport Sankofa Gas

Ghana aims to complete work on the infrastructure needed to transport natural gas from the offshore Sankofa field for processing onshore. The Sankofa field is located on the Offshore Cape Three Points Block (OCTP). Speaking to the press, Nana Kofi Damoah, head of communications at the Ghana Ministry of Energy, said that work will be complete next August.

The government's announcement follows criticism from the parliamentary minority that the delay in the delivery of the facilities was costing the public a lot of money.

An agreement signed between the government and the project partners, headed by ENI, provides for Ghana to purchase 90% of the gas produced on site, according to a take or pay mechanism. Under the take or pay, whether the government brings the gas onshore or not, it will have to pay about $6 million a month to the producer consortium.

Shell Starts Production at Geismar Petchem Expansion

Shell Chemical LP (Shell) saw the start of production of the fourth alpha olefins (AO) unit at its Geismar, Louisiana, USA chemical manufacturing site. The 425,000-ton-per-year capacity expansion brings total AO production at Geismar to more than 1.3 million tons per annum. Start-up operations began in December 2018.

Source: Shell

Geismar alpha olefins expansion project

This successful completion of the major expansion project makes Shell's Geismar chemicals manufacturing site the largest producer of alpha olefins in the world.

Alpha olefins are key ingredients in many finished products that people use and enjoy every day, including laundry detergents, motor oils, and hand soaps.

The new unit strengthens Shell's leading position in the US Gulf Coast and illustrates the strategic value of its integrated downstream business. The Geismar site is supported with advantaged ethylene feedstock from Shell's nearby Norco, Louisiana and Deer Park, Texas manufacturing sites, enabling the site to respond to market conditions.

The expansion project contains around 3,570 tons of steel, 18,290 meters of concrete and 85 linear km of pipe. Several new pieces of infrastructure were built as part of the expansion, including a new water-cooling tower, a significant expansion of the site's rail loading capabilities, and the repurposing of a previously idled tank farm.

NOC Signs Contract for Benghazi Complex

Libya's National Oil Corporation (NOC) signed a contract with the French building and engineering group Artelia to manage an ambitious development plan for their new complex in Benghazi. The contract was signed by the chairman of NOC, Mustafa Sannallah, and Artelia executive director, Alberto Romeo, in Milan.

"The NOC's new facilities in Benghazi will reflect our potential as a country and the global importance of Libya's oil sector. There is a bright future for our country if we can put conflict and instability behind us," said Sannallah.

The NOC reports that the project would include the headquarters for NOC and other oil companies, as well as government departments, a hotel complex and a conference center. The financing will come from commercial banks, but no details were given as to the cost of the project.

Demand Continues to Grow for Wentworth Gas

Wentworth Resources reported that gas demand for its producing reserves in Tanzania continued to grow in Q4 2018, resulting from combined demand from the Kinyerezi-1, Kinyerezi-2, and Ubungo II power stations, and the burgeoning demand growth from industrial customers including Dangote Cement and Goodwill Ceramics.

The company said that this demand from off-takers collectively resulted in an average daily production in Q4 2018 of 87.3 Mmscf/d, and for the month of December 2018 of 92.5 Mmscf/d.

The average production for the full year 2018 was 83.2 Mmscf/d; above the company's 2018 production guidance range of 65 - 75 Mmscf/d and greater than the Daily Committed Quotient (DCQ) of 80.0 Mmscf/d, which the Joint Venture Partners are required to supply under the Gas Sales Agreement with TPDC and for the Tanesco-owned Mtwara Power Station (ca.2.5 Mmscf/d).

Wentworth and TPDC are continuing discussions with regards to reducing the Madimba gas receiving facility export pressure from the current 92.5barg to around 75barg. This will allow for a sustained overall production rate and/or plateau period from the current well stock, prior to installation of compression facilities. This is technically and operationally feasible and has the potential to extend the production plateau by about 18 months on a standalone basis and about 42 months including slickline and chokes upgrade work; and would be immediately accretive to asset value.

Over 2019 the company anticipates further growth in its gas demand with the extension to the Kinyerezi-1 power plant which is expected to come online in Q4 2019. This facility will initially require 5 Mmscf/d and will build up to approximately 30 Mmscf/d of gas requirement when fully commissioned over a six-month period. Continued gas demand growth in 2019 is also expected, primarily from the Dangote Cement Plant and other smaller industrial consumers; adding an additional 10-15 Mmscf/d to national demand needs by Q2 2019.

Algeria/ExxonMobil Deal to Conclude

Algeria and ExxonMobil will conclude a deal and set up a trading JV before the end of H1 2019, Sonatrach's CEO Abdelmoumen Ould Kaddour said.

"We are very optimistic, and things are moving in the right direction, so we will conclude with Exxon and have our trade JV," the CEO told reporters. No further details were offered by Ould Kaddour.

Sonatrach has previously said it wanted a shale gas cooperation deal with the U.S. major. Sonatrach also said previously that it was in talks with more than a dozen international companies over a JV to trade oil and gas products after agreeing to buy its first overseas refinery.

Total/Sonangol Create Retail JV

Total and Sonangol have established a JV company aimed at developing common retail and distribution activity in the country. The Total-Sonangol JV will initially focus on fuel distribution and lubricants sales on the business to consumer (B2C) segment, starting with a network of service-stations under the Total brand.

Depending on the outcome of the ongoing liberalization process, Total said it also intends to address petroleum products logistics and supply, including imports and primary storage of refined products through this partnership.

Under the current agreement, Sonangol will bring in 45 already existing urban and highway retail stations, with a key presence on selected locations in 10 coastal and central provinces. Total will work alongside Sonangol to rapidly develop this network, in order to meet the highest international retail standards and improve fuel quality distribution throughout the country.

The newly-established company will invest in both infrastructures and marketing activities and will benefit from Total's expertise in retail and its customer-minded approach.

VOG Resumes Supplies to ENEO

Victoria Oil & Gas (VOG) resumed gas supply to Cameroon's 30-MW Logbaba Power Station

in late-December. Gas supply and power distribution commenced shortly thereafter. Since the resumption of the contract with ENEO in late December, ENEO consumption levels have doubled from 15 MW to the full 30 MW at Logbaba as the equipment has been recommissioned.

ENEO gas consumption has recently exceeded take or pay levels of 4.88 Mmscf/d.

The term sheet with ENEO sets out a three-year contract duration with peak delivery of 6.1 Mmscf/d to be made available to the Logbaba station on an 80% minimum Take or Pay basis throughout the year, which equates to a minimum average additional gas supply of 4.88 Mmscf/d.

This differs from the previous contract, which contained a seasonal minimum take or pay element of 90% during the January to June dry season and 30% during the wet season July to December. The initial gas sale price of $6.75 per MMBtu will increase over the three-year term of the agreement by $0.10/MMBtu on each anniversary of the effective date of the agreement.

While gas supply for grid power to ENEO and to others will always be a key strategy of VOG, the Board, as previously announced, is focused on the importance on the diversification of the customer base to reduce dependence on any single customer.

Saudi Arabia Plans South African Petchem Project

Saudi Energy Minister Khalid Al-Falih and his South African counterpart Jeff Radebe revealed that the Saudi kingdom will build an oil refinery and a petrochemical plant in the sub-Saharan African country. The project is part of Saudi Arabia's $10 billion global investment project.

The two ministers held bilateral talks in Pretoria to discuss details of the $10 billion investment announced in July 2018. They also discussed the possibility of Saudi Aramco, the Saudi state-owned oil company, using South African oil tanks in Saldanha to store crude oil.

No details on the plant's capacity were disclosed, but both sides plan to start feasibility studies for these short-term projects.

According to South Africa's Ministry of Energy, Saudi Arabia's importance as a trading partner cannot be overstated since it supplies 40% of the crude oil processed in South Africa.

Dangote Expects Refinery Next Year

Aliko Dangote told reporters that his company is on track to finish its $15-billion refinery by next year. The refinery, when complete, will be one of the world's largest. While the timeline is ambitious Dangote told reporters, "There are quite a lot of challenges, but we're moving. We're still targeting next year for commissioning."


Source: World Economic Forum

Aliko Dangote

Dangote said the plant will export about 35% of the plant's products, while the rest will serve the domestic market. Dangote Industries said in 2018 that the plan was to produce about 50 million liters a day of gasoline and 15 million liters of diesel, though output can be changed according to demand.

The Dangote complex will include a fertilizer plant with a 3-million metric ton annual capacity, set to be ready this year, and a petrochemical plant. They will be powered by gas, which will be sent from the Niger River delta via two 550-km underwater pipelines, also costing Dangote about $2.5 billion.

"By next year, we'll be exporting almost 2 million metric tons of urea and ammonia," Dangote said.

By African Energy Chamber

10

Developments that will Shape Africa's Energy Sector in 2019

This year will be key for the advancement of new exploration and production development projects from West to East Africa

After a year of rebound and recovery, Africa's old and new hydrocarbons markets have an opportunity to further entrench the continent's position as the world's hottest oil and gas frontier in 2019. However, the new year also brings a new set of dynamics and challenges set to influence the future of the industry, from presidential elections to megaproject developments, amidst intensifying international competition.

New African frontiers opening up

Independents are leading the way in exploring and opening up new frontiers across Africa. This year will be key for the advancement of new exploration and production development projects from West to East Africa. Developments to watch notably include Senegal's SNE field development, where FEED works are ongoing and a final investment decision (FID) is expected by Woodside Energy and Cairn Energy this year; Niger's Amdigh oilfield development, where Savannah Petroleum's $5 million early production scheme is set to start anytime soon; and the opening up of Kenya's South Lokichar Basin by Tullow Oil, where FID is also expected before year end amid rising tensions with the Turkana local community.

A year to confirm Africa as a global exploration hotspot

Ongoing bidding rounds in key existing and new African hydrocarbons markets will tell if Africa further confirms its position as the world's new exploration hotspot and manages to attract necessary investment in its oil and gas acreages.

Among well-established African producers, OPEC members Gabon and Congo-Brazzaville each have ongoing bidding rounds. Gabon's 12th shallow and deep-water licensing round is set to close in April 2019 and Congo-Brazzaville's License round phase II in June 2019. With both countries struggling to implement their new Hydrocarbons Codes, the success of these rounds will tell if investors have been convinced by policy reforms developed over the past two years.

> "Independents are leading the way in exploring and opening up new frontiers across Africa

Two bigger African producers and also OPEC members, Nigeria and Angola, are set to launch landmark and out-of-the-ordinary bidding rounds this year. Nigeria will auction its gas flare sites under the Nigerian Gas Flare Commercialization Program, likely to happen after the February general election, and Angola will hold its Marginal Fields Bidding Round, the result of a new May 2018 policy enacted by President Lourenço, and to be launched at the Africa Oil & Power conference in Luanda in June 2019. With the Nigerian Petroleum Industry Bill yet to be signed and the ink still fresh on Angola's new policy regime, both rounds will also be key in assessing investors' interest for both countries' business environments.

Also attracting interest is the newest and arguably one of the upcoming entrants – Ghana – holding its 1st formal licensing round set to close in May 2019 which has reportedly got the attention of 16 oil companies, including majors ExxonMobil, BP, Total and ENI. As a hopeful new East African offshore frontier, Madagascar is also putting 44 concessions on offer until May 2019, none of which has ever been tendered or explored before. For a country without any major oil discovery to date, the ongoing license round is a wager test.

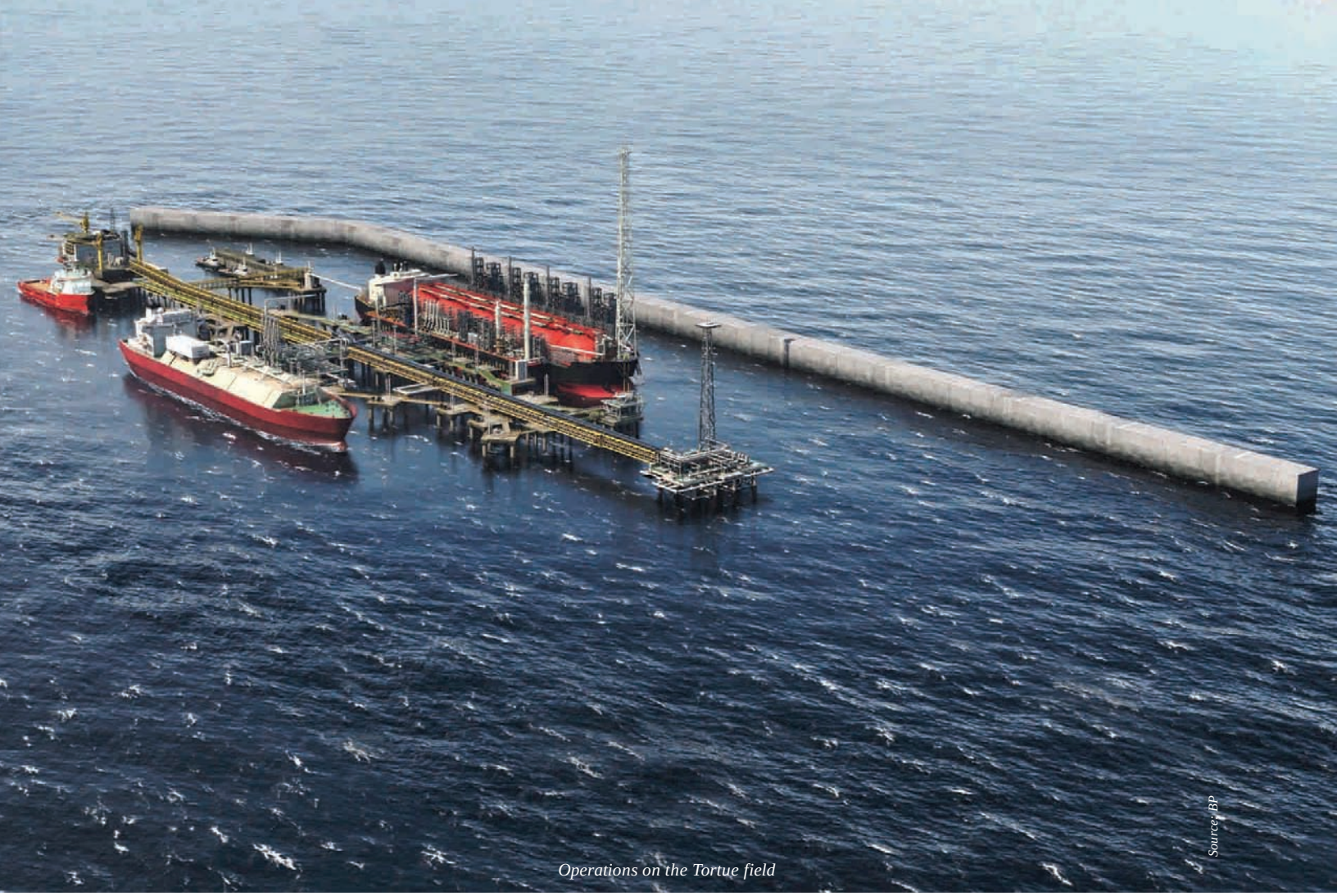
Africa's struggling FLNG industry

After the start of commercial operations at Golar LNG's *Hilli Episeyo* FLNG vessel in Cameroon in June 2018, hopes were high that Equatorial Guinea would soon move forward with its own Fortuna FLNG project, set to be Africa's first deep-water FLNG development. While Fortuna was to be game changing for the gas industry of Equatorial Guinea and the rest of the continent, the development of the $2 billion project has stalled due to a lack of financing. And the clock has been ticking since. The lack of progress on this plan has been so slow that operator Ophir Energy has been denied the extension of its license to operate block R (as of January this year), which contains the giant Fortuna gas discovery. While Equatorial Guinea's FLNG aspirations look more uncertain than ever, 2019 will tell if the country can find the right partners to put the project back on Africa's FLNG map.

Meanwhile, new entrants in Africa's hydrocarbons stage are making remarkable advances towards the development of their own FLNG industry. On December 21st last year, BP finally announced its FID for phase 1 of the cross-border Greater Tortue Ahmeyim development between Senegal and Mauritania, which involves the installation of a 2.5-Mtpa FLNG facility. It became the third African FLNG project to reach FID after Cameroon's 2.4-Mtpa *Hilli Episeyo* and Mozambique's 3.4-Mtpa Coral South FLNG.

Mega projects on the move

Africa's come back on the global oil and gas map is not only due to the vast natural resources found in its soil and waters, but also to the continent being home to mega energy projects set to transform the future of the industry.



Operations on the Tortue field

On the upstream side, the recent inter-governmental cooperation agreement between Senegal and Mauritania, and BP's FID on its cross-border Greater Tortue Ahmeyim development, bodes well for the future of West Africa's hydrocarbons industry. The project aims at extracting the 15 Tcf of gas estimated to be held in the Tortue gas field, located at a depth of 2,850 meters. However, the ability of both Senegal and Mauritania to work out their differences to ensure a more sustainable development of their offshore reserves and facilities around the MSGBC Basin is a factor to watch out for.

African mega gas projects are not the sole property of the continent's West coast, with Mozambique moving forward with two landmark projects putting the Southern African nation on the global LNG map. Following the launch of the Coral South FLNG project by ENI in June 2017, a FID is now expected in the coming months for the Anardarko-led Mozambique LNG project, an onshore LNG development initially consisting of two LNG trains totaling 12.88 Mmtpa to export the gas extracted from the offshore Area 1, estimated to contain a whooping 75 Tcf.

Sub-Saharan Africa's biggest petroleum producers, Nigeria, is also moving forward with massive oil development projects in 2019. Last year already saw the launch of Total's $3.3-billion *Egina* FPSO in Nigeria, where production officially started in the first days of 2019 and is set to peak at 200,000 bopd. FID is now expected on Shell's Bonga Southwest offshore field in Nigeria early this year, a multi-billion-dollar development whose production is expected to reach 180,000 bopd.

International contenders and pretenders

As Africa strengthens its position at the center of global transformation, it is increasingly becoming the playground for international actors willing to benefit from the continent's vast resources.

While China has asserted its position of a contender in the continent, will new continental dynamics lead the Asian giant to change its investment strategy or portfolio? With Russia's intentions on the continent becoming clearer and clearer, will the first Russia-Africa Summit this year translate into more concrete Russian deals across the continent? At the same time, will the US' "Prosper Africa" initiative launched in December 2018 be able to counter both rising international competition and declining US influence on the continent?

A complex energy diplomacy dilemma for OPEC in Africa

With a majority of its members made up of African nations since the joining of the Republic of Congo in June 2018, OPEC's evolving relationship with the continent as it strives to manage the global supply glut will be requiring skillful diplomatic ingenuity.

On one side, Africa's biggest producers and OPEC members Algeria, Libya, Nigeria, Angola and Congo-Brazzaville, are striving to boost their domestic output, which makes it harder and harder for the Organization to negotiate its production cuts.

On the other side, the continent is also home to a flurry of upcoming petroleum producers like Senegal, Kenya and Uganda, or old players

making a comeback like South Sudan, some of them part of OPEC's Declaration of Cooperation, whose upcoming or increasing output adds another layer of complexity to the formulation of OPEC's global oil prices management strategy.

An increasing African output from OPEC and non-OPEC member countries only complicates OPEC's maneuver capabilities and increases its dilemma of both providing a stable pricing environment conducive to investments, while avoiding a worsening of the supply glut that would push prices further down.

Africa's biggest petroleum producers cast their ballots

Among the series of elections happening in the continent this year, from Senegal to Mozambique, none will be more important for the African oil sector than that of Nigeria this February. The Nigerian presidential election is set to shape the future of the industry, not only because Nigeria is Africa's biggest oil & gas producer, but because what happens in Nigeria impacts the rest of the subcontinent one way or the other. While both Muhammadu Buhari, seeking re-election, and his ally turned rival Atiku Abubakar have committed to the signing of the Nigerian Petroleum Industry Bill, the ability of the future President to get his office in order and get the bill passed quickly will heavily influence investments within Nigeria's hydrocarbons sector for years to come.

North, Algeria and Libya are also entering an election year, with the 2019 Libyan general election set for the first half of the year, and Algeria's for April. Both countries are on a transformation path. Libyan authorities plan to more than double the country's output to 2.1 million bopd by 2021, providing politics doesn't tamper hydrocarbons governance and the work of the National Oil Company. With Muammar Qaddafhi's son Saif al-Islam Qaddafhi set to stand for election and the country still divided between West and East, maintaining the stability required by investors will prove challenging.

In Algeria, where a wave of reform is shaking the entire hydrocarbons sector, elections are expected to maintain a relative status-quo, at least politically speaking. The country's national oil company, Sonatrach, has launched an ambitious transformation strategy that will see it investing $56 billion over the next four years and internationalizing its operations across major global energy markets. 2019 could even see the state-owned giant and Africa's biggest company further expand south of the Sahara.

Angola's steady road to reforms

Since taking office in the summer of 2017, Angolan President João Lourenço has been implementing a bullish reformist agenda which is drastically transforming the governance of the country's oil & gas sector. Angola is reforming fast, but will market forces allow changes to happen at that pace and yield the results that the government is looking for?

While international investors seem to think so, with Total and BP signing major agreements to boost their Angolan operations over the past few months, 2019 will tell if the international oil industry is being convinced of Angola's return as a competitive African frontier or not. To showcase the work being done by Sonangol and the Angolan government to generate more investment in the country's oil & gas industry, Angola is backing up an international conference being organized by Africa Oil & Power in Luanda from June 4-6, 2019, where it will be launching the Angolan Marginal Field Bidding Round. This will be the first official investment roadshow organized in Angola under the current administration, and one that is set to unveil a new set of reforms and investment commitments.

South Sudan's march to peace

The major progression in South Sudan, and one on which the entire economy relies, is that of the peace accords. The Sudanese and South Sudanese authorities have time and again demonstrated their commitment to the peace process, which has remained peaceful for the most part. However, will peace deals translate into investment promises and money being invested into the South Sudanese economy this year? Some signals point to that direction, with South Africa's Central Energy Fund committing $1 billion to South Sudan late last year, but markets are still skeptics and observers will remain pragmatics and wait to see how the peaceful transition is managed and how oil production resumes before making any concrete moves.

A year to improve market access for East African producers

With Uganda set to join the club of African petroleum producers by the early 2020s, efforts are on the way to develop adequate infrastructure for the evacuation of oil that will be produced from the Lake Albert Basin. The project seemed to be positively moving forward when Uganda and Tanzania exchanged the inter-governmental agreement for the 1,443-km East African Crude Oil Pipeline in May 2017. However, the partners in the pipeline's construction, French major Total, China's CNOOC and Tullow Oil, are yet to make a final investment decision on the project. Meanwhile, the Host Government Agreements are to be signed this January, but delays in concluding the pipeline's financial deal have already pushed back Uganda's oil production ambitions from 2020 to 2021. The pipeline is crucial for the further integration of the East African community and to set a positive record of joint planning, financing and implementation of landmark energy projects in the region.

By Mario A. Chiaramonte
Geolog International

Geochemistry Moves to the Wellsite

The prolific marriage of mud logging with reservoir geochemistry for a better reservoir characterization in real-time

Geochemistry Evolution

Petroleum geochemistry became a consolidated discipline in the oil industry only in the 1970s, but its real boom was in the 1980s. At that time, it was mainly focused on understanding the origin of oil and gas and it quickly evolved through time becoming a fundamental technology in exploration; biomarkers, source rock evaluation, and gas isotopes became very popular tools, largely adopted by almost all oil companies. Later, only in the middle of the 1990s, geochemistry started to be considered as a suitable tool also for reservoir evaluation and for production optimization.

Detailed fluid and rock characterizations, obtained through different and advanced analytical tools, started to be used to better understand reservoir heterogeneities and to support production strategies. Reservoir geochemistry becomes more and more widespread, recognized as a useful tool in petroleum engineering.

The rapid evolution of instrumental analytical chemistry in those years greatly supported the grow of reservoir geochemistry. The availability of high-resolution Gas Chromatography (GC) and Gas Chromatography Mass Spectrometry (GC-MS), assisted by more and more powerful computers, the accessibility to many other innovative analytical instruments, significantly increased reservoir geochemistry reliability, making possible its diffusion and large adoption.

The further, quite recent and impressive improvements in instrumental analytical chemistry can be considered as a real game changer supporting an additional and even larger development of reservoir geochemistry. This last extraordinary progress in analytical instruments is due to two concurring factors. The first is the growing need of environmental monitoring, a very popular and urgent issue, determining the set-up of compact, portable and high performing equipment. Many instruments, developed for an efficient and distributed environmental monitoring, can be easily adapted for oil industry purposes improving sensibility and resolution standards. The second factor is the continuous development of nanotechnologies, with spectacular consequences on analytical capabilities. The lab on chips devices is a clear but not unique example of this. Finally, a significant contribution to analytical capabilities is also coming from space exploration: one of the most diffused XRD equipment, used by many service companies at wellsite, was set up for mineralogical analyses on Mars.

This new generation of instruments made possible a further important step in reservoir geochemistry: some activities have been moved from the lab to wellsite. Compact and robust instruments, designed to run environmental analyses everywhere needed outside the labs, can be easily installed in mudlogging units at wellsite. For the oil industry, it is a clear example of cross fertilization, technologies developed in another industrial sector can be easily adapted to its needs and quickly adopted.

This is in short, the reason for the marriage between reservoir geochemistry and mud logging.

Mud Logging Evolution

On the other side, mud logging was born a long time ago, long before geochemistry. Originally it was a basic tool to detect hydrocarbon hints in drilling mud: any fluorescence or gas bubbling, discovered at the surface, was considered as a positive sign, highlighting possible hydrocarbon presence. At the very early stage of petroleum exploration, this was one of the few tools available to detect hydrocarbon presence in the drilled sedimentary sequence. When, many years later, in the 1960s, gas detection became quantitative and enough accurate, mud logging turned out to be a fundamental service to monitor the amount of gas entering in the hole to prevent kicks and possible blow outs due to mud density lightening. Thereafter mud logging was considered as an important and essential tool for safety, but the growing accuracy in gas detection, including quantitative distinction among different gas species in the range C1-C5, largely extended its application also to reservoir evaluation. Mud logging became through time a more and more widespread tool both for safety and reservoir characterization, even if for this last target, wireline logging, and successively LWD, has always been considered as the reference tools.

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A mud logging-geochemical unit operating in the USA for unconventionals

Nowadays mud logging, thanks to a systematic approach including well calibrated and standardized devices for gas extraction at a constant temperature, pressure and volume and to a full and reliable chemical characterization of extracted hydrocarbons in the range C1-C8, is continuously growing and constantly gaining credibility, eroding the predominance of wireline logs and LWD.

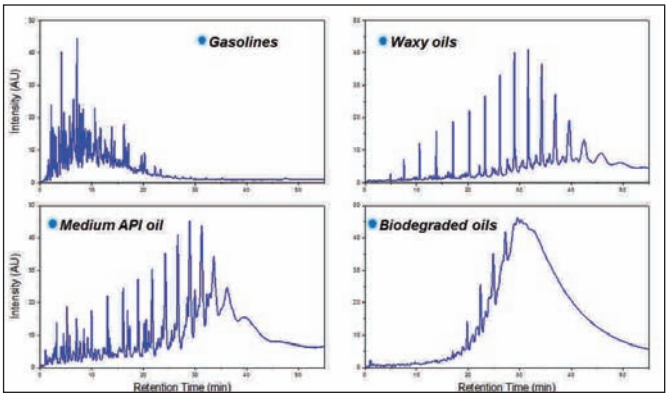
The Marriage of Mud Logging with Reservoir Geochemistry

Reservoir geochemistry, or more, in general, some lab activities, have been moved to wellsite in the mud logging units, already designed to host analytical instruments. The logical further step was to integrate the two approaches to provide more reliable and exhaustive answers to technical issues.

All images are courtesy of Geolog International

An example of this is the integration of chemical analyses performed on gas extracted from mud with isotopic carbon analyses. This additional characterization of gas composition can be used to get important information. In the case of gas shows in the cap rock, the isotopic value can clarify if the gas was generated in situ, if isotopic composition is typical of abiogenic gas, or if it is escaping or escaped from the reservoir, if isotopes shows an isotopic signature of a thermogenic gas, similar to that of reservoir gas. Isotopes can highlight if oil and gas in the reservoir migrated to the trap together or if they are the products of two different phases of source rock maturation or even if gas has a different origin from oil. All these pieces of information have a direct impact both on exploration, but also on field development and on the evaluation of the petroleum potential of an area.

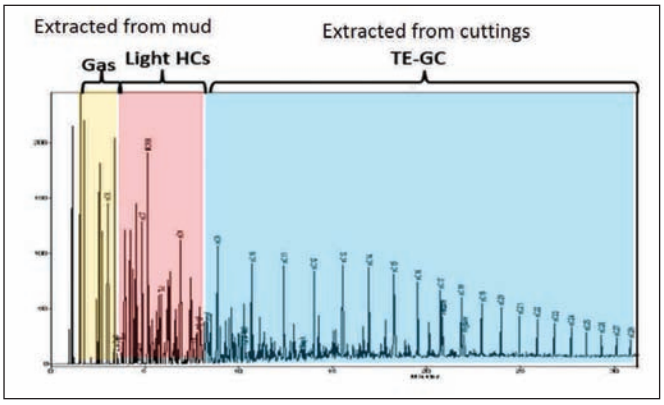
Another example is the integration between mud gas data and geochemical analyses on cuttings. Very recently Thermal Extraction Gas Chromatographic (TE-GC) analyses of cuttings were introduced at the wellsite. These type of analyses are a very powerful tool to discriminate between different types of oils, providing in real time important information about oil type in the reservoir. The following figure is a clear example of this.



At the same time, other information can be obtained about oil origin by using pristane/phytane ratio. Pristane and phytane are two biomarkers that can be easily detected by using TE-GC analyses and their ratio

can be used to understand oil origin and, if combined with concentration of other molecules like C17 and C18, to give an indication about oil thermal maturity.

A similar information can be indirectly obtained also from light hydrocarbon (C5-C8), extracted from mud and by combining these two pieces of information together, uncertainties can be drastically reduced and the final interpretation highly improved. The light fraction of hydrocarbons is always lost in cuttings during their preparation for TE-GC analyses. By combining light hydrocarbon extracted from mud and TE-GC trace we can have a full and complete analysis of hydrocarbon trapped in the reservoir, as shown in the following picture.



Sometimes mud contamination, mainly coming by oil base muds, can heavily interfere with both methodologies, but their integration can greatly reduce uncertainties and avoid misinterpretations. In case of different migration phases from the same source rock at a different level of thermal maturity or from different source rocks, the integration of the two methodologies can greatly help in reconstruction of the whole process in defining the true petroleum potential of the area.

Another example of fruitful integration between mud logging and reservoir geochemistry is given by the combination between mud gas data and X-ray diffraction (XRD) and X-ray fluorescence data (XRF). XRD provides a mineralogical characterization of reservoir by using cuttings, whereas XRF performs a chemical elemental characterization of cuttings. Both these techniques have been applied at wellsite some years ago, but nowadays dramatic improvements have been introduced by some companies, like Geolog. The combination of the two methodologies allows a detailed zonation of the reservoir according to different faces based on mineral occurrence and different ratios of elements detected by XRF, all this on the basis of well-established interpretation criteria defined in the frame of chemo-stratigraphy. Combination of reservoir zonation, obtained by using XRF and XRD, and hydrocarbon occurrence by using mud logging data can be very useful to determine and to characterize the most favorable intervals in the reservoir, to be easily recognized in appraisal or development wells.

The recent improvements obtained in clay mineral quantification by using new advanced instruments and sophisticated software for XRD data processing makes possible and fruitful the application of this integrated approach also in unconventionals where source rock and reservoir are the same geological object and clay minerals can be particularly abundant.

The Way Forward

It has been demonstrated by several field applications that the marriage between mud logging and reservoir geochemistry is very fruitful and can generate a lot of added value, but the process of integration is far from the end and still ongoing. Many other analytical techniques can be moved to the wellsite in the coming years and this will offer other opportunities like those just described. Many pieces of information will be provided at the wellsite with lab quality in real time, allowing better decisions to be taken at the right time to reduce costs and to improve integrated reservoir characterization. There will be additional clear benefits not only for exploration, but also for field development and production optimization, all this by exploiting technologies developed in other industrial sectors.

New Tool Provides Metal Loss and Geometry Data in a Single Inspection Run

Source: T.D. Williamson

T.D. Williamson (TDW), the global pipeline solutions provider, has commercialized a 4-inch magnetic flux leakage (MFL) + deformation (DEF) + internal versus external discrimination (IDOD) tool that helps ensure pipeline integrity by detecting pitting and general corrosion as well as interacting features such as dents with metal loss in small diameter, low pressure pipelines.

The tool produces accurate and comprehensive metal loss and geometry data in a single run, reducing inspection costs and time. Its innovative design ensures the tool performs within the optimal inspection velocity range, producing high-quality survey results with reduced flow conditions. The tool generally requires a minimum operating pressure of 20.7 bar (300 psi), although it is capable of lower pipeline operating pressures and flows on a case-by-case basis.

According to Tod Barker, Senior Product Manager, Pipeline Integrity, the 4-inch tool overcomes challenges associated with conventional MFL inspections, such as difficulty navigating tight bends and speed excursions that limit data accuracy.

"In-line inspection using MFL technology is one of the most common non-destructive inspection methods utilized for the detection of general and pitting corrosion in pipelines," Barker said. "The difficulty associated with conventional 4-inch MFL designs is, to sufficiently saturate the pipe wall with magnetic flux, the brushes must be short and thick. This creates drag that makes it more difficult for the tool to traverse the pipeline at optimal velocity. Slowing down, speeding up and stops and starts can all negatively affect the quality of the inspection data. The 4-inch tool significantly reduces that risk."

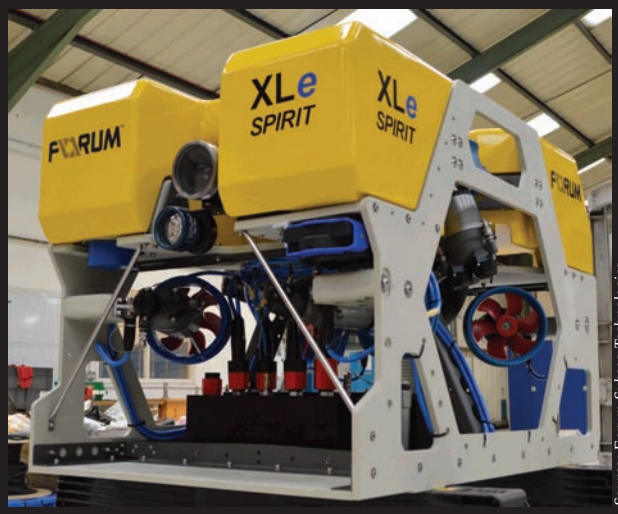
TDW validated the reliability of the 4-inch tool in liquid and gas, at pressures as low as 13.78 bar (200 psi). "In a recent low flow liquid pipeline inspection, the TDW 4-inch MFL+DEF+IDOD performed within the recommended speed of 3.05 meters (10 feet) per second or less for 100 percent of the inspection," Barker said. With extensive verification testing during tool development, and more than 430.9 km (268 miles) in 31 customer pipeline inspections, this tool is well prepared to provide high quality pipeline inspection data for many pipeline conditions.

Forum's New eROV Offers Big Savings for Operators

Forum Subsea Technologies is driving cost efficiencies for the subsea sector with the addition of its latest electric remotely operated vehicle (ROV). The recently launched *XLe Spirit* is the first observation-class ROV to utilize Forum's Integrated Control Engine (ICE™) to bring greater functionality commonly only found in larger work-class vehicles.

The advanced control electronics pod fitted to all Forum XLe observation class vehicles enables superior connectivity and expansion capabilities when compared with other ROV's on the market. Ethernet interfacing allows for seamless integration with other industry sensors using common IP architecture and ease of remote data transfer.

Kevin Taylor VP of Subsea commented: "As the subsea market continues to recover from a sustained downturn, cost efficiency is high on the agenda for the industry. Forum recognized the opportunity to apply our leading software to a more compact vehicle to enhance capabilities and meet the changing demands of the sector.



Source: Forum Subsea Technologies

"By utilizing the same system across all vehicles, pilots only have one interface to learn as the skills are transferrable between the smallest observation vehicle and the largest trenchers. This means training can concentrate on operational tasks opposed to control systems, providing further efficiencies."

The *XLe Spirit* incorporates a number of features to maximize its stability for use as a sensor platform, including regulated propulsion power, optimized thruster orientation and location, accurate thruster speed control and a wide range of auto-functions for positioning and flying. The *XLe Spirit* has just completed a twelve-week test program at Forum's test tank in Kirkbymoorside, Yorkshire. It will be sent for sea trials in the first quarter of 2019.

Pepperl+Fuchs Introduces the Next-Generation Purge and Pressurization System

Pepperl+Fuchs, a world leader in process automation, has introduced an advanced Bebco EPS® purge and pressurization system, designed for Class I or II/Div. 2 and Zone 2/22 locations. This innovative and compact manual or automatic system delivers all the features needed for reliable hazardous location protection within a small, streamlined solution.

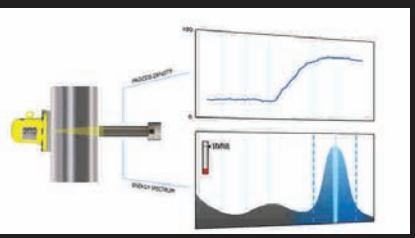
The 7500 series Ex pzc/Type Z purge and pressurization system can be fully automatic or manual and purges a common enclosure of hazardous gas or dust to maintain positive pressure. It effectively reduces the classification within the protected enclosure to a non-hazardous area. The 7500 carries ATEX and IECEx certifications and is UL listed. It operates within an extremely small footprint of only 5.8» x 3.8» x 1.9».

"The new, compact 7500 series is easy to use, offering absolute reliability and efficiency. When fully automated it provides excellent enclosure protection for electrical equipment like motors, drives, control panels and cabinets, and gas analyzers," said Kristen Barbour, Marketing Manager. "Whether you need gas or dust protection in the oil and gas, chemical, maritime, or offshore industry – the Bebco EPS 7500 can be used in process industries around the world for applications that previously required heavier and more expensive explosion-proof protection."

The 7500 Series includes intelligent automatic monitoring and control of enclosure pressure with dilution and continuous flow functionality. The system makes automatic adjustments and provides an alarm output for reliable protection. It is designed in marine-grade chromate aluminum – making it rugged enough to withstand the harsh conditions of many process industries. The 7500 uses universal AC/DC power and is available as both a panel mount and external mount. The large touch screen enables quick and easy setup while also providing status LEDs, a bar graph for pressure, and multiple program selections.

Source: Pepperl+Fuchs

Tracerco Launches Hyperion for Bulk Level and Density Measurements



Source: Tracerco

Tracerco has added to its award-winning range of advanced nucleonic instrumentation by announcing the launch of Hyperion™. Designed using innovative scintillator-based technology, Hyperion™ is a non-contact, no moving parts measurement solution that provides accurate and extremely reliable bulk level and density measurements. This enables customers in the oil, gas, petrochemical, refining and mining industries to solve their most challenging process measurement and control problems.

Externally mounted, eliminating possible leak paths, this extremely robust solution is not affected by adverse process conditions such as high pressures, extreme temperatures, fouling or corrosive fluids. Hyperion™ also comes with unrivalled stability and automatically compensates for the effects of ambient temperature changes, allowing for sustained accuracy and virtually no age-related drift in its measurements.

Housed in 316L stainless steel as a standard, Hyperion™ is highly ruggedized, ensuring that vibrations or dust settling has no impact on its operation. Internal sealing also safeguards the condition of Hyperion™, even in the event of water ingress.

With an enhanced self-diagnostics capability and built in condition monitoring, Hyperion can monitor health status and relative humidity, predict component failures, and provide an end of life estimation. This allows operators to diagnose why errors in the measurement may be occurring, providing a proactive and cost-effective approach to the planning of any maintenance on equipment.

Graham Barker, Market Manager at Tracerco stated: "The capability to visualize and accurately control process conditions inside a vessel is extremely important for operators. By obtaining accurate and repeatable level and density measurements with Hyperion™, operators can maximize product throughput, adhere to environmental regulations, in addition to being assured that they are running the most efficient and cost effective operating conditions to optimize their processes."

Hyperion™ is Tracerco's latest addition to its nucleonic instrumentation portfolio and will provide major production, safety and environmental benefits to its customers across the globe.

REGIONAL COOPERATION

There were a number of 'hot' talking points over 2018 for the global oil industry as well as those specific to the African oil & gas scene. In Africa, specifically, "regional hub" and "African cooperation" dotted the headlines regularly.

Only a decade ago, African resource holders were fiercely competitive, and cooperation was merely a talking point for government/development agencies and conference delegates. The status quo has definitely changed. While these same countries are still competitive, it is in a much more constructive manner. Looking out for their own interests is paramount, but now, so is looking out for the interests of their African neighbors.

A prime example can be seen with Equatorial Guinea in its natural gas pursuits. Minister of Mines and Hydrocarbons, Gabriel Mbaga Obiang Lima of Equatorial Guinea, said in April, "It is imperative that African nations monetize their gas, and that energy users benefit from this cheaper, cleaner, locally produced resource. Equatorial Guinea is committed to working with its neighbors in the region to find solutions that bring benefit to us all."

Equatorial Guinea of course wants to profit but would rather see its gas go to African nations, benefitting its own economy, while also helping bring down costs for those neighbors that rely on expensive imports. The country will supply gas to Togo under its LNG2 Africa initiative, in which Equatorial Guinea is promoting the utilization of LNG within Africa, using gas sourced and processed in Africa. Togo will study the import, regasification of LNG, and its use for power generation.

Another example is the new agreement between Nigeria and its North African counterpart Morocco, with their planned Nigeria-Morocco Gas Pipeline (NMGP). This plan has moved from conception to FEED study over a short time with the first phase of the FEED expected to be complete by the end of Q1. The FEED signals the implementation of the cooperation agreement signed in Rabat, by leaders of both countries last year. The NMGP is designed to be 5,660 km long, will reduce gas flaring in Nigeria and encourage diversification of energy resources in the country. Both countries expect to complete the project in phases over a period of 25 years.

Another pipeline development to serve the region also emerged recently. The West African Gas Pipeline (WAGP), will see an extension from its source in Nigeria. The existing pipeline currently sends gas from Nigeria to Togo, Benin and Ghana through a 678-km network. NNPC chief, Maikanti Baru, said the extended gas pipeline will traverse at least 15 West African countries and connect to an existing European gas pipeline. According to Baru, the feasibility study of the gas pipeline has been concluded and the pre-FID (final investment decision) and a greenfield optimization study is currently ongoing.

Egypt, with its own considerable natural gas resources and strategic location near gas discoveries in Cyprus and Israel, and access to export markets, is a natural choice in becoming a regional hub for gas processing. Already having the natural gas infrastructure, including pipelines, petrochemical and LNG plants, Egypt is looking to turn this capacity into a money-making proposition while also helping its Mediterranean neighbors.

One project under this objective is a pipeline from Israel to Egypt. Overseas Private Investment Corporation (OPIC), the institution that funds projects led by US firms in developing countries, said it will provide funding for the pipeline. The project will transport natural gas from Noble Energy's gas fields offshore Israel to Egypt.

Further, over the past several months Noble Energy executed multiple agreements to support delivery of natural gas from the Leviathan and Tamar fields, into Egypt. This helps Egypt in its ambitions to become a regional energy hub, providing access to both growing domestic markets and existing LNG export facilities. The EMG Pipeline, approximately 90-km, located primarily offshore, will connect the Israel pipeline network from Ashkelon to the Egyptian pipeline network near El Arish.

In addition, another agreement supporting Egypt's regional hub goals will see it bring in gas from Cyprus for processing. A pipeline from the Cyprus' Aphrodite discovery area to Egypt is being proposed. Under the terms of this agreement, gas offshore Cyprus could also be used for Egypt's domestic needs.

With Egypt's own growing resource base and the deals that will see the country bring in gas for processing, there is potential for this gas to be exported to other countries, and also for associated processing into petrochemicals for both domestic and export markets.

Bilateral cooperation can also be noted to the south of Egypt. The government of South Sudan has strengthened its relationship with African countries through a number of cooperation agreements and new engagement in the oil industry, including with its northern neighbor Sudan. A November agreement between the pair will see South Sudanese engineers sent to Sudan to be trained in oil exploration and mining. Sudan, formerly

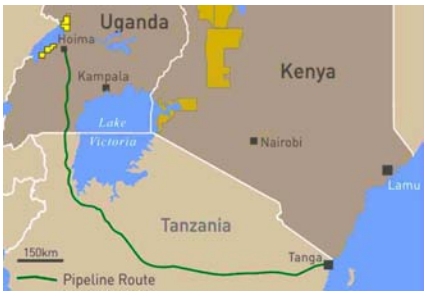
> "The NMGP is designed to be 5,660 km long, will reduce gas flaring in Nigeria and encourage diversification of energy resources in the country.

the foe of South Sudan, played a prominent role in supporting the relatively recent South Sudan peace agreement.

Furthermore, South Sudan has reached out to a number of its African counterparts for cooperation in the oil and gas sector, including Equatorial Guinea, South Africa, Uganda and Nigeria. In November, South Sudan signed a deal that will see South Africa invest $1 billion in the country's petroleum industry. According to South Sudan's Minister of Oil, Ezekiel Lol Gatkuoth, the investment will go into building a refinery and pipelines as well as oil exploration. A portion will also be geared toward building local capacities, including the training of workers and engineers. As early as 2017, South Sudan began its cooperation with Equatorial Guinea, signing an MoU that set out the terms for a strong bilateral relationship between the African oil and gas producers. Under the partnership, an exchange of information on policy and regulation; promoting upstream, downstream and infrastructure projects; and collaboration between the national oil companies Nilepet and GEPetrol was to be seen. South Sudan and Nigeria also recently signed a multi-sector cooperation agreement which included oil and gas activities.

> South Sudan signed a deal that will see South Africa invest $1 billion in the country's petroleum industry.

The East African nations of Tanzania and Uganda are striving to build up their respective petroleum sectors and to that end, have initiated a number of cooperation deals. One of the most notable is the East African Crude Oil Pipeline (EACOP) that will transport Ugandan crude oil from the Hoima district to the Tanzanian port at Tanga. In September 2017, the presidents of both nations laid the foundation stone for the expected 1,445-km pipeline.



Mozambique, with its massive natural gas reserves, is looking to not only build an export LNG terminal, but to also divert larger quantities to South Africa. The two countries have discussed the building of a pipeline that could potentially supply regasification terminals that are on South Africa's drawing board.

Further to these examples, there are plenty more to be seen. Going back a decade the buzzword was African solutions, now it seems that this concept has become reality and its results will become increasingly apparent moving in to the next decade. Be sure to catch each issue of *Petroleum Africa* to keep up to date on the developments resulting from this newly invigorated spirit of cooperation.

Partnership Approach Proves Crucial in Remote Healthcare

A partnership between Remote Medical International and Tullow Oil is ensuring that the healthcare needs of its workforce are met on its Kenyan operations

Tullow has a rich heritage of discovering significant oil resources in East Africa. The group first started exploring in Uganda in 2006, successfully opening the Lake Albert Rift Basin, which has discovered resources of some 1.7 billion barrels of oil. Tullow has taken its knowledge and understanding of the geology in Uganda across into neighboring Kenya. Since 2012, Tullow's successful exploration and appraisal drilling campaigns in Kenya have resulted in the opening of a second new tertiary rift play in the South Lokichar Basin.

It all began in Kenya in 2010, after signing agreements with Africa Oil and Centric Energy to gain a 50% operated interest in five onshore licenses. In 2012, Tullow farmed in to onshore Block 12B with 50% and increased its interest in Block 12A to 65%.

The Ngamia-1 exploration well in Kenya marked the start of a significant program of drilling activities across the acreage. The Ngamia-1 well, in 2012, successfully encountered over 200 meters of net oil pay, the second East Africa onshore tertiary rift basin opened by Tullow. This has since been followed by further exploration success in the South Lokichar Basin at the Amosing, Twiga, Etuko, Ekales-1, Agete, Ewoi, Ekunyuk, Etom, Erut and Emekuya oil accumulations.

Safety is crucial in the oil and gas sector and the safety of oil and gas workers is paramount. It is not just protecting workers during catastrophic incidents but managing their day to day needs. When operating in regions such as Africa, this healthcare provision is made more difficult by the often remote and inhospitable regions.

Partnership Approach

For its operations in Kenya, Tullow turned to Remote Medical International (RMI) to provide comprehensive medical services. The operations are primarily in northwest Kenya, an area with complex geographical, political, and environmental challenges in addition to the usual complexities of industrial work in remote locations. Remote Medical and Tullow have been successful in addressing these challenges, greatly improving the on-project health, and making a positive impact on the local communities. This has been achieved through a collaborative partnership, location-specific planning, innovative solutions to problems, and localization programs.

"We provide healthcare to various organisations, operating companies, governments, non-profits and the UN when they need health care for

their workers in remote and challenging places around the world," Wayne Wager, CEO Remote Medical International, says. "We provide medical care, we provide medics that go to these remote and challenging places and take care of the workers for commercial companies, including soldiers seconded to the UN and so forth, and all the associated services in connection with providing that medical care, such as equipment and supplies."

Local Involvement

From the outset, RMI were aware that this project would be extremely dynamic, both because of the inherent challenges and the capricious nature of early stage oil and gas production. It was decided that in such an unpredictable scenario close contact was essential, so RMI opted to headquarter operations in the same office complex in Nairobi with Tullow. With operations co-located, communication was efficient, and implementation proceeded according to plans. Tullow provided 14 key deliverables to achieve within 90 days of award, all of which were hit.

RMI gets its staff from two places. "First, we have very high standards for our medical practitioners," Wager explains. "We put them through a very strict online test that they must pass. Once they've passed, they

All images are courtesy of Remote Medical International

go through an interview process with our medics and our Chief Medical Officer so that we're very confident in the people that we send out. Those people are very competent in the field and also have resources back at base. A very competent medic in the field is just one phone call away from our Global Communication Center. They can call and get advice immediately from other medics and our medical staff. We also support them with equipment and supplies that are very high quality.

"They're working with the best equipment and have the best pharmaceuticals available to them, all within the country constraints. As you know, the way medicine is practiced on a work site in a remote area is much different than somebody showing up in an urban ER setting. One of the other resources that our medics have is telemedicine so that they can send physiological signals, blood pressure heart rate, ECG and video to our medics at the communications center. We have a very, very comprehensive backup for our medics in these remote places."

Part of Tullow's sustainability culture is to encourage local employment. Due to the capital and technology intensive nature of the industry, only a relatively small number of highly technical and specialized personnel are needed by operations. They also operate in countries where the oil industry is new and just developing and so the skills and expertise of the national workforce can be limited or still emerging.

However, they have a commitment to hiring locally and have set internal targets for increasing the proportion of staff represented by the nationals of the host countries. There are also employment opportunities in the supply chain, particularly in onshore operations. "We try to maximize these by requiring our international suppliers to employ and source goods and services locally, as part of their contract with us," their policy states. "We also work closely with our host governments to ensure that their expectations around skills localization are balanced with operational and labor market realities."

For their part, RMI undertakes rigorous screening of medical personnel to ensure project success, which is essential on a project like this one. At the height of the project RMI employed 52 people in support of Tullow, each thoroughly vetted in a multi-step process. Of those, over 65% were local workers – including doctors, clinical officers, ambulance drivers, and administrative staff. This met both Tullow's and RMI's social responsibility goals.

One standout achievement came with the ambulance driver positions. RMI created a custom training and mentorship program in partnership with the Kenya Council of EMTs. This program provided EMT certifications that met international standards–a first in Kenya. Within two years of starting the project, the percentage of Kenyan nationals had increased to 85%.

Stay or Go

A close relationship with RMI's in-country evacuation partner, Amref, and partner hospital Aga Khan University Hospital in Nairobi was established for efficient medical evacuations when needed although Wager was keen to point out that evacuation is a last resort.

"It's like the cavalry coming over the hill," Wager says of emergency medical evacuations. "It's very exciting and when people talk about our role they talk about the evacuations, but in fact, I'm speaking for RMI, our medical team are taught to minimise the drama and minimize the complexity of the healthcare. I emphasize very, very strongly, without sacrificing any quality of outcomes. We monitor that very carefully with an electronic medical record system, which are reviewed by medical doctors.

"Our quality of care is very high, but one of the things that I think has been abused in the industry, is at the drop of a hat, workers are evacuated and the quality of care they get is not necessarily better. We find that doing less is more so monitoring the workers, the patient, very closely with our staff on site is often the best option. They end up doing a lot better than had they been evacuated. Evacuations are, again, very glamorous, sounds cool, but it is not necessarily the best thing for the worker."

Reduced Recordables

This comprehensive approach to care, combined with a deep and committed partnership from Tullow, allowed the two companies to achieve a remarkable 86% reduction in TRIR over the course of this project. "Remote Medical International is a customer-oriented service company with innovative IT solutions to medical issues such as secure cloud-based patient notes," Gordon Scott, EHS operations manager, Tullow Kenya, says. "They have very good training capabilities and medical support to a large project in a very challenging area. A very responsive company with an excellent project manager who maintains very close contact to respond quickly and efficiently. They have achieved excellent results in training and up-skilling the local community, work force and medical providers."

Investment in Refinery, Petrochemicals is Driven by Innovation and Efficiency

Dangote is constructing the largest fertilizer Plant in West Africa with the capacity to produce 3.0 million tons of Urea per year as part of the gigantic economic transformation project

The ongoing investment in refining, petrochemicals, fertilizer and gas is driven by the desire to bring innovation and efficiency into all aspects of Nigeria's oil and gas sector, the Dangote Group President and Chief Executive, Aliko Dangote, has said.

Dangote, who made this disclosure at the Nigeria International Petroleum Summit in Abuja held in late January, said the company is committed to the concept of energy efficiency and innovation in the oil and gas sector.

The business mogul, whose 650,000 barrel per day capacity refinery is the largest in Africa, was represented by the Group Executive Director, Government and Strategic Relations, Dangote Industries Limited, Engr. Ahmed Mansur.

Addressing participants at the forum, Mansur said the theme of the conference, "Shaping the Future through Efficiency and Innovation", was quite apt given Nigeria's quest for economic transformation.

According to him, Aliko Dangote is passionate about efficiency and innovation in the oil & gas sector through adding value to the hydrocarbon process.

Mansur said the company's passion and drive is seen in the building of the project, which will become the world's largest single train refinery on completion and therefore a boost to Nigeria's economy.

He stated: "The refinery can meet 100% of the domestic requirement of all liquid petroleum products (Gasoline, Diesel, Kerosene and Aviation Jet), leaving the surplus for export.

"This high volume of PMS output from the Dangote Refinery will transform Nigeria from a petrol import-dependent country to an exporter of refined petroleum products. The refinery is designed to accommodate multiple grades of domestic and foreign crude and process these into high-quality gasoline, diesel, kerosene, and aviation fuels that meet Euro V emissions specifications, plus polypropylene," he said.

> "This high volume of PMS output from the Dangote Refinery will transform Nigeria from a petrol import-dependent country to an exporter of refined petroleum products.

Source: Dangote Group

L-R: Minister of State for Petroleum Resources, Dr. Ibe Kachikwu; Group Executive Director, Government and Strategic Relations, Dangote Industries Ltd., Engr. Mansur Ahmed and the Group Managing Director NNPC, Engr. Maikanti Baru

Mansur disclosed that Dangote is also constructing the largest fertilizer plant in West Africa with capacity to produce 3.0 million tons of Urea per year as part of the gigantic economic transformation project. He explained that the Dangote Fertilizer complex consists of Ammonia and Urea plants with associated facilities and infrastructure.

"Nigeria will be able to save $0.5 billion from import substitution and provide $0.4 billion from exports of products from the fertilizer plant. Thus, supply of fertilizer from the plant, which is set for commissioning before the second quarter of 2019, will be enough for the Nigerian market and neighboring countries," he added.

Speaking further, he said at a time when the oil and gas industry and the global economy is in a state of flux, it is most appropriate that attention should be given to the future especially given the incredible speed and quantum of change taking place in every facet of human endeavor.

"Our economy in particular cannot afford to ignore these massive changes. Our decades of dependence on this industry for our economic well-being and the urgent need for diversification has been widely recognized and is clearly the most critical challenge for our policy makers.

"But even as we seek to diversity from oil, and we are, indeed, making observable progress in this regard, we cannot ignore the need to continue to exploit these God-given resources in a more efficient and innovative manner," he added.

He commended the Management of the Nigerian National Petroleum Corporation (NNPC) for its unwavering support in Dangote's quest to make Nigeria self-sufficient in the production of petroleum products.

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By Miguel Sanz

ANGOLA

The Grace Period is Over for João Lourenço

Angola's economic troubles began in 2014 when global crude oil prices dipped and severely hampered the government's ability to generate revenue

João Lourenço has been president of Angola since September 26, 2017. About one year later, he cemented his hold on power by taking over the chairmanship of the ruling *Movimento Popular de Libertação de Angola* (MPLA). Although he reshuffled the government, for instance by replacing the transport minister, and the vice-president, Manuel Vicente, most other ministerial posts had not changed from the previous administration.

Despite promises to diversify the economy and fight corruption, which he has described as a scourge on society, his actions so far appear contradictory to his publicly-voiced intentions and declarations past and present.

Lourenço inherited a dire economic situation, characterized by serious shortages of foreign currency, particularly of the US dollar, and the continual devaluation of the kwanza. The currency depreciated 40% against the greenback in 2018. In addition, inflation has hovered around 30% and is set to rise.

Angola's economic troubles began in 2014 when global crude oil prices dipped and severely hampered the government's ability to generate revenue. Angola depends on oil for 75% of its government revenue and 90% of its exports. This over-dependency on the hydrocarbon sector left the country vulnerable to economic shocks, potentially placing the country into an irrecoverable position.

Diversification has long been the answer, but execution of a strategy and plan never materialized in the previous administration. Lourenço's chief election campaign plank centered on reducing the dependency on Angola's hydrocarbons sector and creating new revenue streams from existing resources or developing new ones. Diversification was also a key condition for the International Monetary Fund (IMF) to agree to a three-year extended fund facility for Angola worth $3.7 billion which the creditor announced on December 7, 2018; $990 million would be immediately disbursed. Ending corruption, including bribery and money-laundering was another condition.

> "If Lourenço is serious about eradicating corruption, he should be careful with who he deals with and how this may look to the outside. So far, his defense scorecard, his lavish spending, support for Vicente and family appointments can only undermine his credibility.

João Lourenço

Diversification: An Urgent Priority

Angola is in 'desperate' need of cash, and therefore Lourenço is pursuing an ambitious investment program to develop the country's agricultural, tourism, and mining assets. For instance, the government is planning to invest $230 million across the country over the next six years to support its *Proyecto de Desarrollo de Agricultura Comercial*, a development initiative launched last December which aims to commercialize the agricultural sector. Over $77 million had already been invested in such projects countrywide at the end of 2018.

Oil majors, such as the UK's BP, France's Total and US oil giant ExxonMobil have also signed memoranda of understanding with the state-owned oil company, Sonangol, to develop new ultra-deep offshore oil operations. However, the amount of the investments has not yet been made public.

A lot of the money for the new investments appears guaranteed by the government. Against the backdrop of a poor

economic outlook, coupled with crude oil prices below the levels the government had counted on – although Brent crude prices rebounded early this year off the back of a production cut agreed by OPEC member states – Angola will have to resort to more borrowing. Thanks to reprofiling of its debt through the issuing of $5 billion-worth of euro-and dollar-denominated bonds, likely explains the reduced fiscal deficit, as maturities have been extended in the medium-term. However, debt-to-GDP remained at a risky 90% at the end of 2018, meaning that more commercial loans will be needed to finance the ambitious investment program and will continue to damage economic growth prospects, not least because China is Angola's largest purchaser of oil.

> "The true extent of Angola's corruption problem is unclear, but authorities both in Angola and the US have indicated that close to $30 billion in illicitly obtained money from the state is being held in offshore accounts.

Meanwhile, Angola already owes Beijing a lot of money. Official figures put this at $23 billion last year, but due to the lack of reliable data this number could be much higher. Furthermore, as a lot of that debt with China has been guaranteed through oil-swap deals, increased volatility in crude oil prices is likely to again create more financial headaches for the government. Foreign investors are also likely to be concerned, as a growing debt burden will hinder the government's ability to honor its debt repayments and ability to unlock financial resources, for instance to pay for projects or salaries to its civil servants.

Anti-corruption

Lourenço also pledged to stamp out corruption, which he has described as a 'scourge on society'. International observers were positively surprised when he sacked the children of ex-president dos Santos from key positions within the state-owned oil company, Sonangol, and Angola's sovereign-wealth fund, FSDEA. José Filomeno, a son of the former president and former head of FSDEA, and his business ally, dual Swiss-Angolan national Jean-Claude Bastos de Morais, were arrested in Angola in September 2018 on charges they had conspired to defraud the state in multiple jurisdictions, including in Switzerland and the United Kingdom. Both have denied wrongdoing. Authorities in Mauritius, Switzerland and the UK froze their assets, while investigations were ongoing. However, London's Commercial Court, which is part of its High Court, lifted the freezing order due to what it said were serious procedural failings in the original complaint.

Notwithstanding, and based on a recognition that corruption was conducted with impunity under the previous administration, Lourenço's government in May last year adopted an amnesty bill for the voluntary repatriation of stolen state funds that had been moved offshore. The true extent of Angola's corruption problem is unclear, but authorities both in Angola and the US have indicated that close to $30 billion in illicitly obtained money from the state is being held in offshore accounts. But the amnesty bill, which expired in December, appears to have attracted little interest according to legal practitioners on the ground, and few actually repatriated any money. The government has promised to now coercively go after those who have stolen public funds and hidden it abroad.

Angola's ability to do this remains in doubt. Repatriation of financial assets will also depend on the willingness of banks abroad to transfer back the money. Tightening anti-money-laundering legislation across the world, will make commercial banks – especially those in OECD countries – more averse to high-risk jurisdictions like Angola, diminishing the effectiveness of the law. Since 'de-risking' of Angola's banking sector took place after the collapse of Portugal's Banco Espirito Santo – in part due to toxic credit at its Angolan subsidiary – hardly any Western banks have resumed correspondent banking relationships for transacting in US dollars, which explains a lot of Angola's current problems. But because oil-dependent Angola's financial sector is highly dollarized, such correspondent banking is also key to repatriate the stolen funds, placing doubt about the likely success of Lourenço's policies. His advisors should be aware of that.

Restoring trust depends on the government's ability to reform the financial sector, which remains concentrated around a few politically exposed persons among Angolan banks' shareholders; of the 27 commercial banks registered with Banco Nacional de Angola – the central bank and sector regulator – five control over 80 percent of total banking assets, deposits and loans. In addition, the banking sector is highly centralized with the vast majority of Angolans and small- and medium-sized enterprises unable to access formal credit. Instead, the bulk of credit given by Angolan banks goes to a few hundred chosen investors. Given that diversification is a priority of the Lourenço presidency, his ability to also restructure the financial sector will be critical.

From Reformist to a Return to Old Habits

The government's new policies have indeed caught many media headlines, but Lourenço's own behavior during his first year in office also contradict his narrative. It started with lavish spending during a state visit to Europe, where the Angolan delegation signed several agricultural development projects with French financiers, among others. According to reports on the Maka Angola news website, the Angolan delegation went on a spending spree, chartering at least three aircraft, including a Boeing 787 VIP private airliner, a Boeing 737 and a Gulfstream business jet. According to the leasing company, the Boeing 787 cost $74,000 an hour to charter. It goes without saying, that this sort of spending does not marry well with Lourenço's promises, and his narrative of being a modest person.

Others have pointed to the Lourenço family's real-estate property in the town of Bethesda, Maryland, United States. A report by US newspaper *The Washington Post* citing public records said the property was purchased in 2013 for $1.7 million by the Lourenço family. While it is not illegal for Angolans to own property abroad as a primary residence, such revelations will probably fuel suspicions about the president's true intentions.

More questions emerge over Lourenço's positioning vis-à-vis the former vice-president, Manuel Vicente, who Portuguese prosecutors in 2017 charged with bribing that country's attorney-general in 2011. Lourenço refused to recognize the Portuguese authorities' competency to try Vicente and lambasted the charges as 'interference' by the former colonial power. It was agreed that Vicente would be tried in Angola instead. This never occurred. Although Vicente has been sidelined from the MPLA leadership, he remains an influential businessman in both Angola and abroad.

Another worrying trend is potential nepotism and conflicts of interest, including within the military. In April 2018, the president promoted his brother – General Sequeira João Lourenço – as deputy head of the President's Intelligence Bureau, which oversees the military, the police and the intelligence services. Two months prior he allegedly sold a state-owned aircraft to his brother's aviation company – *SJL Aeronáutica* – without a public tender and at an undisclosed price.

It does not end there. His plans to expand the military budget should sound some alarm bells. While already having among the largest military budgets on the continent, Lourenço is intent on expanding it further. One reason raised has been to fight piracy, as Angola is looking to expand its offshore oil production operations and modernizing its naval capabilities would ensure security of such operations against such threats; this is despite Angola suffering hardly any such attacks in its waters over the past few years. Although official figures indicate that Angola's military budget halved between 2014 and 2017, well-respected Sweden-based think tank Sipri has noted that estimates of real military spending are hard to come by across Sub-Saharan Africa. Despite the decline, in September 2016 Middle East-based Privinvest Group announced on its website that it would provide naval vessels to the Angolan navy and construct a ship-building facility together with a London-based partner.

Around that same time it was revealed that Privinvest had signed contracts to supply ships to Mozambique which were never delivered. The deal, along with two others left Mozambique with a massive bill of $2.1 billion – more than its total national debt at the time. On December 29, South African police arrested Manuel Chang, Mozambique's finance minister, when the deals with Privinvest were signed, on suspicion of fraud relating to the deal. This followed an indictment by the US district court of New York City, which led to the arrest of Jean Boustani, an executive of Privinvest. Three former bankers of Swiss bank Credit Suisse, and a dozen more have also been indicted for their role in the scheme.

While Privinvest was not the only company involved with inflating Mozambique's debt to astronomical levels, the company has faced resistance in other jurisdictions, such as Nigeria. Paris-based *The Africa Report* revealed in June 2018 that the Nigerian finance minister in 2014 had refused to accept a $2 billion investment proposal from Privinvest after it appeared clear that Nigeria would have to provide most of the guarantees for the loans that would finance the joint venture; Privinvest had reportedly proposed to take control over a derelict shipyard from the Nigerian navy and refurbish it. That Angola has signed a deal with Privinest under Lourenço's watch – granted he was defense minister at the time – may therefore also concern investors, especially since the government never confirmed the investment. Furthermore, in May 2018, Credit Suisse announced a $700 million loan to Angola.

Conclusion: Napoleon Walks

If Lourenço is serious about eradicating corruption, he should be careful with who he deals with and how this may look to the outside. So far, his defense scorecard, his lavish spending, support for Vicente and family appointments can only undermine his credibility. That the highest ranks of the MPLA and the broader governing elite in Angola remain intact, bar a few cosmetic changes to the Political Bureau – the apex governing body of the MPLA – is also worrying.

Adopting policies that, indeed, are likely conditions imposed by international financiers such as the IMF but that in reality are unlikely to produce any change in behaviors not only puts his own track-record at risk, but also the reputation of the entire country. Furthermore, the lack of criminal convictions of former senior officials – not only of the former president's family, but also other high-ranking MPLA cadres – suggests that their behavior will not change. Either the authorities are deliberately delaying the processes to get some initial goodwill from foreign investors, or the system is so slow that no conviction will serve to deter future corrupt behavior. The end result is that foreign investors and financiers engaging in Angola are setting themselves up to considerable compliance and legal risks. Giving the 'new' president the benefit of the doubt may have been valid in his first year, but the lack of progress should prompt them to adopt a more cautious approach. Just as Napoleon in George Orwell's *Animal Farm* promised a whole new way of governing, once in power he quickly adopted the same habits as his former steward.

By Jennifer Nickle, Deputy Editor

EGYPT

UN photo # 603012

Abdel Fattah El Sisi

President: President Abdelfattah El Sisi (since June 2014)
Independence: February 1922 (from UK protectorate status)
Population: 99,413,317(July 2018 est.)
GDP (purchasing power parity): $1.204 trillion (2018 est.)
GDP - real growth rate: 4.4% (2018 est.)
GDP - per capita (PPP): $12,700 (2018 est.)
Director General of Energy: Tarek El Molla

Oil - production: 640,000 bpd (October 2018)
Oil - consumption: 878,000 bpd (2016 est.)
Oil - proved reserves: 4.4 billion barrels (January 2018 est)
Natural gas - production: 50.86 Bcm/d (2017)
Natural gas –consumption: 57.71 Bcm/d (2017)
Natural gas - proved reserves: 2.186 trillion cubic meters

Source: CIA FactBook

Politics & Economy

Known for its pyramids and ancient civilization, the Land of the Pharaohs, Egypt, has played a central role in the politics of the greater Middle East over modern times. The country is the most populous Arab nation, with an estimated 90 million citizens and growing.

Egypt's political arena is a complicated issue to say the least, although since General Abdul Fattah el Sisi took control from the Muslim Brotherhood several years ago through a 'bloodless coup,' a modicum of calm has been seen. The country is still a bubbling cauldron of unrest in some areas, however. The political issues and anxieties over the future have generated ongoing protests, labor strikes, mistrust between Islamist and secular parties, and Muslim-Christian tensions in some parts of the country. Despite these issues, Egypt is still a prime destination for investment and one of the safest countries in the region.

The country hosted presidential elections over three days in March 2018. President el-Sisi, faced off against relative political unknown Moussa Mostafa Moussa. The election was little more than a formality extending el-Sisi's presidential mandate another five years. Numerous candidates were at one time in the race, including former Prime Minister Ahmed Shawfik, who ran against Muslim Brotherhood candidate Mohamed Morsi in the 2012 election. Leading up to the 2018 elections, it has been widely reported that other candidates were intimidated and strong armed into withdrawing from the race.

This year the country is expected to host "local" elections in Q4; if they take place, they will be the first in a decade. The local elections have been witnessing a significant delay after municipal councils were dissolved eight years ago. Recently, the local administration law,which has not yet been sent to the president for approval, is stated to be the reason behind the delay. Elections were supposed to be held in March 2016 but were rescheduled repeatedly. Parliamentary spokesman Salah Hassaballah told reporters in April 2018 that the local elections would be held during H1 2019 after the local administrative draft law is passed by the Parliament; however, other officials have tagged elections to take place closer to the end of 2019.

Egypt has been struggling economically for much of the last decade, although 2018 was much better than in previous years and is expected to improve even more in the coming year. The improvement in the economy can be partly attributed to the recovery in domestic demand, particularly private consumption. This is forecast to sustain Egypt's economic growth at 5.2% in 2019, according to the United Nations World Economic Situation and Prospects (WESP) 2019 report.

While the WESP report notes that external demand that drove the Egypt economy's growth rate in 2018, is forecast to stay mostly favorable, it also warns that structural vulnerabilities, including weak fiscal and balance of payment positions, are projected to weigh on growth prospects.

The reforms that the government began instituting in 2014 set the stage for balanced and inclusive growth. Its bold reform program was aimed at spurring the economy and enhancing the country's business environment. Egypt's first wave of reforms were focused on rebalancing the macro economy, including passage of the VAT Law, reducing energy subsides, containing the wage bill, and the liberalization of the Egyptian pound. The second wave of reforms focused on improved governance and the investment climate, including the Civil Service Reform Law passed in October 2016 and policies to remove investment barriers and attract local and foreign investments.

An Economy on the Mend

- Headline inflation slowed to an annual 13.5% in July 2018 from a record high of 33% a year ago.
- Core inflation fell to single digits for the first time in more than two years.
- Foreign exchange reserves continued to improve and reached $44.3 billion in end-July 2018.

These reforms along with the gradual restoration of confidence and stability began to yield positive results. In fiscal year (FY) 2018, real GDP grew at 5.3%, compared to 4.2% in FY 17. The economic pickup is driven by public investments, private consumption, and exports of goods and services (such as oil and tourism); and dynamism is seen in the tourism, gas, ICT/telecom and construction sectors. According to the World Bank, Egypt's inflation continued to ease, despite upward pressure from decreased subsidies and subsequent increases in energy costs and transport fares. Headline inflation slowed to an annual 13.5% in July 2018 from a record high of 33% a year ago. Similarly, core inflation fell to single digits for the first time in more than two years. Foreign exchange reserves continued to improve and reached $44.3 billion at end-July 2018.

The government has scaled up key social protection short-term mitigating measures, including through higher allocations of food smart cards and targeted conditional and unconditional cash transfer programs to alleviate the adverse effects of the economic reforms on the poor and vulnerable. The measures were also aimed at increasing investments in the country's human capital. To effectively integrate human development in the social protection measures, the conditionality of the cash transfer programs is related to health and education. The country's social protection measures are shifting from generalized energy and food subsidies to more poverty and human development targeted programs.

The Upstream Industry

Egypt has one of the busiest petroleum sectors on the continent, with both oil and natural gas playing key roles in the country's economic and infrastructure development. The past year has been no different with Egypt once again garnering its fair share of attention and activity, and then some.

In H2 2018 the government began working on a new model for future oil and natural gas production contracts in undeveloped areas to spur exploration and help the country become self-sufficient in energy. The new system would largely have companies bearing the cost of exploration and production in return for a share of the output, and then be free to sell to whomever they wish. The production share would differ from concession to concession, depending on the investment. The current PSAs entitle companies to roughly one-third of the project's output to help cover exploration and production costs. The remaining output is split between the company and the government, which then has the right to buy the producer's entire share at predetermined prices. Under the new system the government would not have to struggle to pay for production diverted to the local market. The new contracts would enable investors to use their full share of production as they see fit, without having to sell it to the government at a preset price, so long as they pay all exploration and production costs. This new investment system, if it becomes law, could be applied to future agreements in undeveloped frontier areas; existing contracts would not be affected.

The country is home to a host of exploration firms, major and independent alike. Companies like ENI, BP, Apache Corp, TransGlobe Energy and a long list of others work at what seems to be breakneck pace to keep Egypt's oil and natural gas production totals on an even keel. Over the past year this activity helped Egypt reverse its status of net importer to become a net exporter of natural gas once again.

Egypt signed a deep-water oil and gas exploration deal with Shell and Petronas worth around $1 billion for acreage in the West Nile Delta. The companies are expected to drill eight wells, according to Egypt's Ministry of Petroleum. In addition to the Shell and Petronas deal, the Ministry signed a deal with Rockhopper, Kuwait Energy and Dover Corp. worth $10 million. This deal is for exploration in Egypt's Western Desert.

Leading the charge in bringing Egypt's natural gas activities to the top of the resource heap is ENI and its famed, super-sized Zohr field which came online when the country was last covered in depth by *Petroleum Africa* in May 2018. The Italian firm has continued to work to increase production on the development. Just recently ENI said it was working

Source: ENI

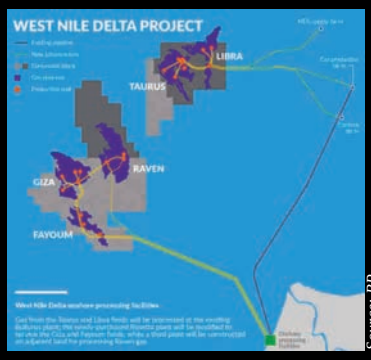
Zohr Field

on completing the drlling of its fourteenth Zohr well. The addition of this well will mark the total number of producing wells on the field at 10. The well is expected to immediately be put onto production once complete. The company will start evaluating the field's production to estimate the number of wells to be drilled in the second phase of the Zohr field project. ENI is looking to boost production rates to 3 Bcf/d by the end of the year. The company also completed its latest stake sale in the Shorouk concession where the Zohr is located. When last covered, ENI had sold off stakes to BP and Rosneft, the latest sale gives Mubadala Petroleum a 10% holding in the prolific acreage.

In late-2018, ENI awarded Saipem and Petrobel an offshore contract addendum worth more than $1.2 billion for EPCI activities in relation to the "Ramp Up to Plateau" phase of ENI's Zohr Field Development Project. The current addendum to the work includes the installation of a second 30-inch diameter gas export pipeline, infield clad lines, umbilicals and electrical/fiber optic cable, as well as EPCI work for the 10-well field development in deep water. The ramp up to plateau phase was scheduled to commence in January, in direct continuity with the optimized ramp up phase which has been completed in over a 17-month project execution period from its contract award. The new phase of work has Saipem deploying a range of highly specialized vessels including the *Castorone*, the latest generation of ultra-deep water pipelayer; the *FDS*, a subsea field development ship; the Heavy Lift Vessel *S7000*; the DP3 subsea construction vessel *Normand Maximus*; the subsea construction vessel *Saipem 3000*; the pipelay vessel *Castoro Sei* and the multipurpose *Normand Cutter* and *Far Samson* vessels.

In addition to the Zohr work, ENI has been working hard on a number of other projects in Egypt, including knocking out a discovery in the Western Desert on the East Obayed concession. The discovery was made with the drilling of the Faramid South exploration prospect. The well reached the target depth of 17,000 ft and encountered several gas bearing layers in the Kathabta sandstones of Jurassic age. The well has been opened to production delivering 25 Mmscf/d, confirming the potential of the East Obayed concession.

The company also made a light oil discovery with the drilling in the Faghur Basin. The discovery well, the SWM B1-X, on the South West Meleiha license, was drilled to a total depth of 4,523 meters and encountered 35 meters net of light oil in the Paleozoic sandstones of Dessouky Formation of Carboniferous age and in the Alam El Bueib sandstones of Cretaceous Age. The well was opened to production in the Dessouky sandstones and delivered 5,130 bpd with low associated gas. According to ENI, the discovery confirmed the high exploration and production potential of deep geological sequences of the Faghur Basin and it plans (in the near term) to drill other exploratory prospects located nearby the A2-X and B-1X discoveries to consolidate what can result as a new productive area. The production is expected to be routed to already existing infrastructures and then shipped to the El Hamra Terminal through existing pipelines, after Development Plan approval by the Ministry of Petroleum and Mineral Resources.



Source: BP

BP in Egypt

Zohr partner BP has been busy in the country and let it be known in Q4 2018 that it planned to be a lot busier investing in its assets. According to CEO, Bob Dudley, the company will spend more than $1 billion in the coming year. Dudley said that BP will spend $1.8 billion on new discoveries and licensing rounds as it looks to expand its operations in the Middle East. "We've spent in the last two years $6.8 billion in Egypt and it will be about $1.8 billion dollars next year." In early December BP revealed that it was acquiring a 25% participating interest in the Nour North Sinai concession area from ENI. The concession is located in the East Nile Delta Basin, approximately 50 km offshore in the Eastern Mediterranean, in water depths ranging from 50 to 400 meters and covering a total area of 739 sq km. ENI spud its first well on the concession just prior to the deal being made. The company expects the start-up of the third phase of its West Nile Delta development, the Raven soon. The Raven follows the Taurus / Libra and Giza / Fayoum start-ups. This phase will see the development of 5 Tcf of natural gas and 55 million barrels of condensates. The Phase 3 Raven project includes eight wells and will be developed as a deepwater long distance tie back to shore, where the new Raven onshore plant is being built, immediately adjacent to the Giza / Fayoum facilities.

Australian independent Rockhopper Exploration recently released an update on its holdings in Egypt, specifically the Abu Sennan concession. Its Al Jahraa-10 well, during Q4, reached total depth in the Abu Roash-F formation. Oil pay was calculated in the Abu Roash-C and Abu Roash-D levels. Following testing operations, the well was brought into production from Abu Roash-C at a rate of 130 bpd gross, and subject to further increase. Upside potential exists in Abu Roash-D which is being evaluated for possible acid stimulation. Exploration well ASZ-1X located on Prospect S was spud in November and was the first of two commitment wells to be drilled in the first phase of the new concession. An oil discovery was made in the Abu Roash-C level with preparations underway to test and produce. The operator has applied to EGPC for a development lease over the discovery. Following joint venture approval, an active drilling program has been agreed for 2019 including the drilling of one exploration well, two development wells and a water injection well. Activity in 2019 continues to target the Al Jahraa field, as well as further exploration on the concession. Drilling is expected to commence in Q1.

US independent IPR Energy has been drilling away over the past year or so, executing its largest drilling and operational campaign since entering the upstream sector in Egypt in 1993, with the drilling of 25 of 40 planned wells during H1 2018 alone. The pace of activity carried out through the rest of the year with 15 additional wells in different

Source: IPR Energy

IPR Egypt

areas of the country. The 2018 drilling and workover programs spanned the Western Desert, Nile Delta, and Gulf of Suez in IPR's operated and non-operated portfolio of assets. This combination of exploration, appraisal, and development drilling has increased the company's upstream gross production in Egypt to over 21,000 bpd. In the Western Desert, IPR discovered a new field in the Alamein Lease with the Southeast Alamein-1X (SEAL-1X) exploration well. SEAL-1X encountered 97 ft of pay from the Razzak sand, Basal Middle and Upper Bahariya sands and Abu Roash "G" Dolomite. The Alamein field continued development activity with IPR drilling two new wells (AL-42, AL-44), bringing an additional 580 barrels of oil to the field's overall production. A Dahab sand was discovered in exploration well AL-45X, with virgin reservoir pressure, reinforcing the extended presence of channel sands not produced in prior development campaigns. Initial test rates exceeded 850 bpd. These wells were drilled with new technology by IPR International Oilfield Services' 750 HP rig (IPR-Rig 1), which saw record times and reduced costs for wells as deep as 8,500 ft. IPR also applied for the first time hydraulic frac technology in the offshore North July Concession in the Gulf of Suez to restore production after a successful fracture stimulation workover program in NJ-1 and produced steadily at 550 bpd after the frac job. Artificial lift scenarios are presently being analyzed by field operators to maximize production from this platform, which has been producing water free since 2001.

Pico Oil and SDX Energy encountered oil pay on a well located in the South Ramadan concession offshore Egypt in the Gulf of Suez. SDX Energy is a 12.75% equity owner in the concession with Pico holding 37.5% and operatorship and GPC holding the remaining 50%. The partners' SRM-3 well reached a target depth of 15,635 ft and encountered 75 ft of net conventional oil pay in the Matulla section (primary target), 20 ft of net conventional oil pay in the Brown Limestone formation and a further 15 ft of net conventional oil pay in the Sudr section. The well will be completed in the Matulla section and then tested to establish whether the well will flow at a commercial rate.

SDX Energy, in addition to the South Ramadan action, saw its development lease application for the South Disouq approved by authorities. Construction of a pipeline and central facility have already started. First production from the license remains on track to start towards the end of H1 2019, with SDX expecting to achieve a gross plateau production rate of conventional natural gas of between 50-60 Mmscf/d. The 170 sq km 3D seismic acquisition program at South Disouq is 50% complete and is expected to conclude in early February. The seismic data will then be processed and interpreted by the end of Q3 2019, with drilling on the license set to resume shortly thereafter.

Another independent active in Egypt is Apache Corp. In mid-2018 the company expressed interest in expanding its activities and investments in Egypt, "breaking new ground" in the Egyptian petroleum sector, according to a statement from the North African country's Minister of Petroleum and Mineral Resources Tarek el Molla. The company said it is interested in participating in Egypt's international tender, specifically in bidding on 11 blocks with five of those being in the Western Desert. In July 2018 EGPC and Apache signed a seven-well oil drilling agreement for the East Bahariya concession. In Q3 alone, the company had 12 drilling rigs active and an average production rate of 78,000 boepd. The company has acquired approximately 1 million acres to date of a planned 2.6 million-acre seismic shoot. In 2018 the company initiated the next phase of the program on its new Northwest Razzak concession.

The West Nile Delta Phase 9B, operated by Shell and its partner Petronas, will bring production of natural gas from two deepwater wells. According to Egypt's Petroleum Minister, the complete project also includes several other wells being dug and linked to production. The additional wells are set for completion in H2 2019 and the output aims to reach 400 Mmcf\d. Phase 9B was originally scheduled to come onstream in 2017 but was delayed until Egypt reached an agreement with the partners.

A new entrant to Egypt's E&P scene, Apex International Energy, signed two concession agreements for 1.7 million acres encompassing the West Badr el Din and South East Meleiha (2,535 sq km) concessions, located in the prolific Abu Gharadig Basin in Egypt's Western Desert. Apex was awarded the two blocks as part of EGPC's 2016 bid round. In mid-2018 the company awarded a contract to acquire 1,000 sq km of 3D seismic data in the Southeast Meleiha Concession to BGP International Egypt. Additionally, a host of awards were made to Weir, Vallourec Oil and Gas France, Soconord S.A., and Tenaris Global Services S.A. for the purchase of wellheads, well casing and tubing to support the company's planned drilling program.

Italian firm Edison is selling off its assets in Egypt. According to reports, Apex International Energy and Neptune Energy are among companies considering bids to purchase up to $2 billion of the company's exploration and production assets in Egypt and Italy. The deadline for bids on these assets was in January of this year, but the companies had not yet confirmed whether they would submit bids. Edison's parent company, EDF, is selling oil and gas assets to increase investment in its nuclear and renewable energy segments.

It isn't only the E&P firms who are adding value to Egypt's petroleum sector, service firms also contribute. Schlumberger officially inaugurated its Egypt Center of Efficiency (ECE) facility at the Polaris Industrial

City in 6th of October city. The inauguration took place on December 12 during the company's event to celebrate its 80 years of operations in Egypt. "The ECE is one of the largest facilities in the world bringing the latest in oil field technologies and providing platform for teams to deliver the highest safety and quality for our customers in the region," said Paal Kibsgaard, Schlumberger Chairman and CEO. During the inauguration, Schlumberger signed three MoUs with EGPC and Petrojet. Under the MoUs, Schlumberger will provide training opportunities for fresh graduates, and other programs for petroleum engineers and middle-management.

Downstream

Egypt's downstream picked up a bit over the year, not only on oil but in gas. Egypt took a major step towards energy independence when Petroleum Minister El Molla revealed that one of the regasification vessels off its coast would be leaving. The Minister told Reuters the other vessel would stay behind as part of the Ministry of Petroleum's strategy to maintain energy supplies for the country. In January Egypt's largest LNG JV, Egyptian LNG (ELNG), was up and running once again. The Idku plant was shipping some 520 Mmcf\d of LNG. The exports reflect Egypt's growing domestic natural gas production, which led the country to end the import of LNG and become a natural gas net exporter once again.

Another downstream project that revolves around gas, this time coming into the country, is a pipeline from Israel to Egypt. Overseas Private Investment Corporation (OPIC), the institution that funds projects led by US firms in developing countries, said it will provide funding for the pipeline. The project will transport natural gas from Noble Energy's gas fields offshore Israel to Egypt. This investment will be used to restore and maintain a pipeline, which will strengthen the supply of natural gas in Egypt. Over the past several months Noble Energy executed multiple agreements to support delivery of natural gas from the Leviathan and Tamar fields, offshore Israel, into Egypt. This helps Egypt in its ambitions to become a regional energy hub, providing access to both growing domestic markets and existing LNG export facilities. Noble and some of its partners are acquiring an effective 39% equity interest in Eastern Mediterranean Gas Company, which owns the EMG Pipeline. The EMG Pipeline is approximately 90-km, located primarily offshore, connecting the Israel pipeline network from Ashkelon to the Egyptian pipeline network near El Arish. Initial gas delivery through the EMG Pipeline is expected to occur from the Tamar field to Dolphinus Holdings in Egypt, under Noble's existing interruptible natural gas sales agreement. At startup of the Leviathan field, estimated by the end of 2019, it anticipates selling at least 350 Mmcf/d, gross, to contracted customers in Egypt.

In addition to bringing in gas from Israel there are plans for Egypt to bring in gas from Cyprus for processing. Under the terms of the agreement, gas offshore Cyprus could also be used for Egypt's domestic needs. Following a meeting with the president of Cyprus, Nicos Anastasiades, El Molla told reporters "it is really a way to have… good, win-win positions for not only Cyprus and Egypt, but also for Europe." The Cypriot minister said the agreement concerns building a pipeline from the Aphrodite discovery area to Egypt. The deal can also apply to other gas fields that may be discovered off the island in the future.

On the crude refining end, the Middle East Oil Refinery (Midor) and Technip signed a $1.7-billion agreement that has the Italian service firm taking a leading role in the expansion of the Midor refinery. The project will see the refinery's production capacity increase from 115,000 bpd to 175,000 bpd.

Source: Midor Egypt

By Jennifer Nickle, Deputy Editor

Tanzania

UN photo 646507
Kim Haughton

John Magufuli

President: John Magufuli (since November 2015)
Independence: April 1964 (from UK)
Population: 55,451,343(July 2018 est.)
GDP (purchasing power parity): $162.5billion (2017 est.)
GDP - real growth rate: 6% (2017 est.)
GDP - per capita (PPP): $3,200 (2017 est.)
Director General of Energy: Dotto Biteko

Oil - production: N/A
Oil - consumption: 72,000 bpd (2016 est.)
Oil - proved reserves: N/A
Natural gas - production: 3.115 billion cubic meters
Natural gas –consumption: 3.115 billion cubic meters
Natural gas - proved reserves: 6.5 billion cubic meters

Source: CIA FactBook

Politics & Economy

What is now Tanzania was formed in 1964 following the union between the Republic of Tanganyika and the People's Republic of Zanzibar. The East African country has enjoyed relative political stability for a number of decades, with smooth transitions of power following presidential elections over the years. The country's founding fathers – Mwalimu Julius Kambarage Nyerere and Sheikh Abeid Amani Karume – set the stage for its strong socio-political foundation.

Currently the country is led by John Magufuli, who emerged as the victor in the country's most competitive election in 2015. Nicknamed "The Bulldozer" for his energetic road-building drive and reputation for honesty as a minister, he won the 2015 election on promises to boost economic performance and, like the opposition, fight corruption. He also pledged to tackle youth unemployment, which like in the majority of other African nations is a problem for Tanzania. Further, Magufuli promised to establish free primary and secondary education for the country's youth.

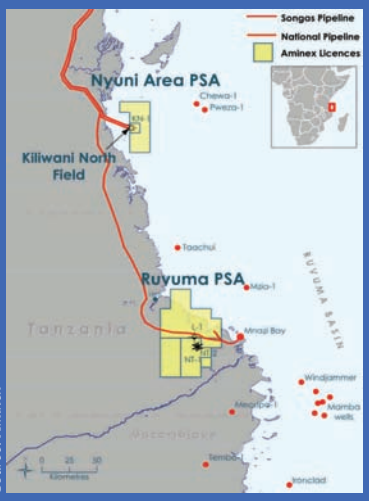
While Magufuli has continued in the country's tradition of stability, there has been some concern over some of his political stances. The concerns come to the surface over his campaign against the independent media and gay rights. Tanzanian laws encourage self-censorship while threats and attacks against journalists hinder critical reporting, according to US-based Freedom House. A "restrictive" Media Services Bill was introduced in 2016, replacing independent media oversight arrangements with a state-run agenda.

Tanzania's overall economic performance is strong, with a good rate of growth. The African Development Bank, in its continental economic outlook report, tagged the country's GDP growing at an estimated 6.6% over 2019 and 2020. Last year the country reported an estimated 6.7% GDP, with the services sector as the main contributor. Tanzania's economy also sees contributions from the agriculture and tourism sectors, historically. Today, the mining and energy sectors are drawing increasing amounts of investments. The country will become a net exporter of natural gas once the massive discoveries off its coast are developed, adding significantly to government coffers.

Upstream Activity

Tanzania is blessed with significant amounts of natural gas and currently a major amount of its power generation uses production from onshore fields as feedstock. The companies producing this gas are smaller independents who maneuvered their way into a position of dominance in the onshore arena. Firms like Aminex plc, Orca Exploration, and Wentworth Resources are all producing natural gas for domestic consumption.

Over the past year Aminex conducted drilling and seismic programs over the Ruvuma PSA acreage. The company has finalized the Chikumbi 1 executive drilling and completions programs, identified and selected the service companies required to operate all aspects of drilling and, based on a competitive tender process, selected Sakson Drilling and Oil Services DMCC to drill the Chikumbi-1 well. It also identified and designed an approximately 220 sq km 3D program over



Source: Aminex

Operational areas of Aminex

the Ntorya development area. The Chikumbi-1 well is located within the Mtwara License of the Ruvuma PSA, west of the successful 2017 Ntorya-2 appraisal well, in the onshore portion of the Ruvuma Basin. Chikumbi-1, which will be drilled to a total true vertical depth of 3,485 meters, will fulfil one of two remaining exploration commitment wells and, upon success, is intended to be completed as a producing well in a future development program. Further, Aminex has signed a conditional rig sharing agreement with Heritage Oil Ltd. in Tanzania in order to reduce mobilization/demobilization costs for both parties.

The company also progressed conditions required to close out a farm-out agreement signed with the Zubair Group in early July 2018. Pending the successful completion of the farm-out, Aminex will be fully carried through to production, which will include the drilling of multiple wells, seismic acquisition and construction of associated infrastructure.

On the Kiliwani North License over the period, the company engaged Schlumberger SEACO to remediate and troubleshoot a faulty sub surface safety valve (SSSV) on its Kiliwani North-1 well. Schlumberger mobilized to location and the SSSV was repaired. During the operation the well was fully opened and test gas flowed to the plant for a short period. Aminex believes that there is a fluid column in the well and is analyzing the operational and testing data. The license has an expiry date of 2036 with no further commitments, has a Gas Sales Agreement in place and access to a Gas Facility with significant ullage. Mapping by Aminex has identified a structural lead, Kiliwani South, with a mean estimated GIIP of 57 BCF. The company is the operator of both the Kiliwani North Development License and the adjacent Nyuni Area PSA with 63.8304% and 100% working interests respectively. Aminex has identified areas to conduct the acquisition of 3D seismic with the intent of progressing low-cost drilling prospects which can be tied into the existing facilities and monetized.

Source: Flick/Iain Cameron

Songo Songo plant entry

Orca Exploration is the operator of the Songo Songo gas field and it operates a gas processing facility on Songo Songo Island on behalf of Songas Limited on a no loss, no gain basis. The plant supplies natural gas to a 25-km 12" offshore pipeline and a 207-km 16" onshore pipeline and is used by the power sector and industrial markets in the Dar es Salaam area. Songo Songo was Tanzania's first natural gas development.

In its most recent operational report, Orca said that its subsidiary, Pan African Energy Tanzania (PAET), signed a short-term sales agreement with state-run oil and gas company Tanzania Petroleum Development Corp. (TPDC) and the state-run utility Tanzania Electric Supply Company (Tanesco), for the immediate supply of gas to Tanesco of up to 35 Mmcf/d. These additional volumes are being processed and transported through TPDC's National Natural Gas Infrastructure (NNGI) and will allow Tanesco to generate increased and more stable power to meet the country's emerging demand.

First gas flowed through the NNGI on December 24 and production averaged 20 Mmcf/d in the first 10 days of operation. Total Additional Gas sales, including those through the Songas gas processing and transportation system (Songas Facilities), averaged 56 Mmcf/d over the same period. The agreement provided a mechanism for the parties to agree to one-month extensions for a maximum term of six months and is expected to be superseded by a long-term agreement. The company said that it can supply additionally volumes from its existing well stock. Two wells, SS-11 and SS12, are tied into the NNGI and SS-10 will be connected if required to meet demand. PAET is currently in the process of installing a refrigeration package as part of the Songas Facilities to ensure that gas can continue to be processed at the plant's capacity. It is expected that this will be operational by mid-2019.

Source: Wentworth Resources

Mnazi Bay Gas Processing Facility, metering skid

Wentworth Resources also supplies natural gas for the Kinyerezi-1, Kinyerezi-2, and Ubungo II power stations, and industrial customers including Dangote Cement and Goodwill Ceramics. The company said that this demand from off-takers collectively resulted in an average daily production in Q4 2018 of 87.3 Mmscf/d and for the month of December, 92.5 Mmscf/d. The average production for the full year 2018 was 83.2 Mmscf/d; above the company's 2018 production guidance range of 65 – 75 Mmscf/d and greater than the Daily Committed Quotient (DCQ) of 80.0 Mmscf/d, which the Joint Venture Partners are required to supply under the Gas Sales Agreement with TPDC and for the Tanesco-owned, Mtwara Power Station s (circa 2.5 Mmscf/d).

In January, Wentworth and TPDC were continuing discussions with regards to reducing the Madimba gas receiving facility export pressure from the current 92.5 barg to around 75 barg to extend the production plateau. This will allow for a sustained overall production rate and/or plateau period from the current well stock, prior to installation of compression facilities.

Wentworth's operational activities in 2019 will include working with TPDC to determine the optimal operating transnational pipeline inlet pressure for the system and ensuring the maintenance of the current production plateau using existing wells and infrastructure. The Mnazi

Bay JV anticipates conducting slickline and choke upgrade activities and will perform regular pressure build up tests to further reduce uncertainty with respect to in-place and recoverable gas volumes over the forthcoming year. These activities will help to ensure that forecast production meets the Daily Committed Quotient (DCQ) of 80.0 Mmscf/d, which the Mnazi Bay JV is required to supply under the Gas Sales Agreement with TPDC and for the Tanesco-owned, Mtwara Power Station, without risking a shortfall in 2019 and beyond.

While the onshore operations provide a solid production base for the country's domestic consumption, its offshore resources will put it on the exporters map when the government and partners eventually come to an agreement on the way forward. Tanzania has around 58 Tcf of natural gas reserves sitting offshore in the Ruvuma Basin that are yet to be developed. Major oil companies looking to develop these reserves include Equinor, ExxonMobil, and Royal Dutch Shell. The government is looking to tie in the finalization of the development plan with significant infrastructure commitments. With its neighbor Mozambique already having progressed its monetization plans for its considerable resources, the Tanzanian government is realizing the importance of finalizing with its contractors – Equinor, ExxonMobil and Shell – so as not to lose out to Mozambique and other global resources holders on securing buyers for its LNG.

At present, Tanzania is trying to speed up talks to move its LNG ambitions forward and toward that end, talks between Equinor and ExxonMobil, who discovered a host of resources offshore, and the government, are ongoing to develop an onshore LNG project. These talks suggest a renewed sense of urgency for the government who would like to be able to begin securing its own gas supply agreements.

Equinor and ExxonMobil hold stakes in Block 2 offshore the country. The block is estimated to contain more than 20 trillion cubic feet (Tcf) of natural gas in place. While the government indicates it wants to push forward, an Equinor spokesman told the *Petroleum Economist* "Negotiations have not yet started and a timeframe has not yet been put in place. From our side we are committed to contribute to an efficient execution of the negotiations."

Source: Ophir Energy

Deepsea Metro 1 offshore Tanzania

The possible glitch in progressing Tanzania's LNG ambitions is the fact that ExxonMobil holds stakes in neighboring Mozambique's gas development. There were rumors that the US supermajor wanted to sell its stake in Tanzania to focus its attention on the planned LNG project in Mozambique where it is partnered with ENI. However, ExxonMobil contends it is committed to Tanzania and monetizing resources discovered there.

Shell and Ophir Energy have also discovered massive natural gas resources on their Blocks 1 and 4. The two blocks are estimated to hold around 16 Tcf of recoverable gas. It is most likely that the Equinor/ExxonMobil and Shell/Ophir blocks will be developed through a single LNG facility. According to a Shell spokesperson speaking to the *Petroleum Economist*, "It is our understanding that the objective of all partners involved in the Tanzania LNG project is to have a single, joint project. We share the view that such a joint integrated project will result in a globally competitive LNG project, which will yield far greater benefits for the host country than a small project can."

When and if Tanzania's LNG plans bear fruit the export facility is expected to be located on the coast at Lindi. According to Equinor, the project could take the form of a 7.5 million ton per year facility, that could take around nine years to progress from signing an HGA via a FID to first production.

Downstream

Tanzania will play a significant role in neighbor Uganda's drive to join the club of African petroleum producers, as the export point for its neighbor's crude. Efforts are on the way to develop adequate infrastructure for the evacuation of the Ugandan crude and they seem to be moving progressively forward. The two governments exchanged the inter-governmental agreement for the 1,443-km East African Crude Oil Pipeline in May 2017. The only thing seeming to hold back the project is the partners in Uganda; CNOOC, Total, and Tullow Oil. The firms have yet to take the FID on the development project. Meanwhile, the Host Government Agreements were signed this January. The pipeline is crucial for the further integration of the East African community and to set a positive record of joint planning, financing and implementation of landmark energy projects in the region. The Environmental Social Impact Assessment report for the pipeline was completed at the end of 2018. The completion and approval of the report will give the green light for Total to start the implementation of the project. The pipeline is expected to cost $3.5 billion and is planned to have the capacity to transport 216,000 bpd. According to earlier negotiations, Uganda will pay Tanzania $12.20 for each barrel flowing through the pipeline.

Over the period Tanzania sought to expand into the petrochemical industry and signed a deal with the process industries business of thyssenkrupp Industrial Solutions South Africa. The firm was successful in securing the engineering and procurement contract for a 45-ton modular skid-mounted chlorine plant in Tanzania, the first of its kind to be installed in sub-Saharan Africa.The modular skid mounted 15- and 45-ton capacity chlorine plants are particularly suited to the African market as they offer a cost-effective and practical solution to industries on the continent who require small chlorine alkali plants for applications such as water treatment and mineral processing.

Aqualis Offshore Opens Perth Office

Aqualis Offshore set up an office in Perth, Western Australia, to support oil and gas developments in the Australasia region. Aqualis Offshore is part of Oslo-listed energy consultancy group Aqualis ASA.

In Australia, Aqualis Offshore will offer the full suite of the company's services including concept, FEED and basic design engineering; transportation and installation; marine consultancy; rig moving; dynamic positioning & critical systems; marine warranty; marine casualty surveys; construction supervision; rig inspection, preservation and reactivation; technical due diligence; risk consulting and renewables.

In 2017, Aqualis Offshore successfully completed the station keeping jobs for both the giant *Ichthys Explorer* central processing facility (CPF) and the *Ichthys Venturer* FPSO.

RESMAN and Tracerco Enter Patent Agreement

RESMAN AS and Tracerco, a subsidiary of Johnson Matthey Plc, entered into a global patent license agreement under which Tracerco will have the right to conduct commercial business based on RESMAN's industry-leading inflow monitoring patent portfolio. The agreement follows a mutually agreed decision for the two companies to discontinue litigation.

Under the rights of the patents, both RESMAN and Tracerco will provide essential well and reservoir monitoring services, enabling oil and gas companies to optimize oil production and support decisions for targeted well intervention to ensure operational efficiency.

Special Dividend for Bowleven

Bowleven's board of directors approved a special dividend of approximately £50 million, or 15 pence per ordinary share. As of November 30, the company held in cash and financial instruments equivalent to $80 million and expects to receive a further $25 million at FID on Etinde. This decision follows the completion of the two-well drilling campaign in October 2018, and therefore the directors of Bowleven have resolved to distribute a significant portion of its surplus cash resources to shareholders.

The level of the Special Dividend takes into account the expenditures on the Etinde program for 2019; the board's commitment to return surplus funds to shareholders; the company's strong balance sheet allowing for the return of cash to shareholders; and the board's expectation of reaching FID on Etinde in the short to medium term, triggering a payment of $25 million from JV partners.

The upcoming Etinde work program and budget has now been agreed among the upstream joint venture partners for 2019. The detailed effort will contribute towards the interpretation of the data and the development options for the block with a view to its commercialization.

Ophir and Medco in Takeover Talks

Ophir Energy and Medco Energi Global are in discussions regarding a possible cash offer to be made by Medco. The cash offer would be for Ophir's entire issued and to be issued share capital. Medco is a leading Southeast Asian energy and natural resources company listed on the Jakarta Stock Exchange with a market capitalization of approximately $900 million, operating across three key business segments being oil, gas, power, and mining.

Shares in Ophir Energy rose by as much as 35% upon the news of the takeover talks. The merger would add Ophir's 25,000 boepd to Medco's approximately 85,000 boepd, with most of this coming from southeast Asia.

AFC Closes SIR Facility

The Africa Finance Corp. (AFC), in its role as Sole Mandated Lead Arranger, successfully closed a €577 million debt financing for Société Ivoirienne de Raffinage (SIR) of Côte d'Ivoire. SIR is the West African country's only refiner. AFC's participation was for €192 million. SIR has an installed capacity of 3.8 million tons per annum of refining capacity and is currently the largest and most sophisticated operational refinery in West Africa. The purpose of the Facility is to repay historical obligations on crude supply, provide a long tenured facility, and reduce the interest rate of SIR's stock of debt.

The Facility comprises a Euro tranche with a nine-year maturity and a West African CFA franc tranche with a seven-year maturity. The long-term funding solution to refinance historical accrued debts will free up resources to enable SIR to make much needed investments in its current operations and upgrade its facility and production processes to align with current environmental emissions standards and expand its business, thereby contributing to job creation. Participating banks include AFC, Deutsche Bank, ICBC Standard Bank, United Bank for Africa, NSIA Bank and Bridge Bank. Counsel for the Lenders was Norton Rose Fulbright and Bilé-Aka, Brizoua-Bi & Associés.

The refinancing facility is integral to the International Monetary Fund's financial program for Côte d'Ivoire as SIR is considered to be a strategic asset for the country.

Sirius Secures Funding for Ororo

Sirius Petroleum is looking to raise funds for its Ororo field in Nigeria, and as such, the company signed a binding agreement for up to $20 million with Barak Fund SPC. The $20 million will be used to contribute to the funding of the first phase of the Ororo field development.

Sirius signed an agreement with Barak for the provision of a $20 million debt facility, which, subject to the satisfaction of all conditions thereto, can be drawn down in specified tranches following first production. The facility will be deployed to pay for costs in relation to Ororo-2 (following first oil) as well as Ororo-3, which are due to service providers under the staged milestone payments for the Ororo work program and marks an important step in developing the strategic, long-term partnership with Barak.

The facility has a term of three years from the date of the first drawdown and is repayable in four equal installments of, if the facility is fully drawn, $5 million (plus accrued interest thereon) in the last four quarters of the term of the loan. Commencing from drawdown, interest is charged at three-month LIBOR plus 10% and is payable quarterly in arrears.

Other key terms of the facility are that the facility may be cancelled, and the outstanding amounts of the loans declared immediately due and payable by Barak upon, among other things, a change of control of Sirius or on the disposal of all or substantially all of the assets of Sirius' group. Sirius has given customary negative pledges, warranties, undertakings, events of default and indemnities to Barak. Sirius will grant Barak an all assets debenture and a security assignment of receivables by way of assignment of offtake contracts. Drawdown is conditional upon, among other things, the satisfaction of customary conditions precedent.

Oil and Gas Talent Registry for Uganda

In East Africa, the Petroleum Authority of Uganda [PAU] has developed a national talent register, listing individuals trained and qualified in different fields related to the oil and gas industry. The register is the first of its kind in the region.

The PAU has placed the database online and intends for it to serve as an employment reference point for its emergent oil and gas sector, will list

engineers, technicians and skilled workers competent to work in the oil and gas projects.

Ernest Rubondo, executive director at PAU, while launching the talent register described the National Oil and Gas Talent Register [NOGTR] as a national supplier database which will serve as a roster for local and international service providers for the sector.

The PAU executive director went on to say that the development of the NOGTR is one of the specific initiatives that relates to promoting employment of Ugandan citizens and that it is a fulfilment of the statutory requirement of employing Ugandans in the oil and gas sector as required under sections 126 and 54 of the Petroleum Act 2013, respectively.

Survitec Opens New Service Hub

Survitec opened a new service and distribution hub in Singapore to meet increased demand from customers across the Asia Pacific region. The extensive complex in Singapore's Sembawang district covers a 7,153 square meter area, of which 1308 square meters is outdoors. With more than 200 personnel, it is Survitec's largest service and distribution center globally, housing three distinct business units: WH Brennan & Co Pte Ltd, Survitec Safety Solutions Pte Ltd and Survitec Fire Solutions Pte Ltd.

The Survitec products and services supplied by the Singapore facility include rental life rafts, fire-fighting equipment, safety, rescue and evacuation systems, and marine electronics equipment, such as EPIRBS. The markets Survitec Singapore services includes the region's maritime, defense and aviation sectors.

Survitec's Southeast Asia business has grown exponentially over the last 10 years and today the company operates branches in Singapore, Hong Kong, Shanghai and Korea, serving more than 5,000 customers across the region.

Total Still Owes Tullow Cash

Tullow Oil revealed in its most recent Operations Update that it was still waiting for Total to pay the funds for its purchase of Exploration Areas 1, 1A, 2, and 3A in Uganda. Tullow said that the French firm hasn't paid the balance of the $900 million owed for the 21.75% stake in the exploration areas.

The transaction was completed in January 2017 and allowed Tullow to retain only 11.67% ownership interest in acreage in the Lake Albert region, where a production plateau of approximately 200,000 bpd is expected in the next several years.

Wild Well Control Announces Montrose Facility Expansion in UK

Wild Well Control (Wild Well), an industry leading provider of well control response, subsea and well control engineering, and training services, announced that it has expanded its Montrose facility at South Ferryden, UK.

Wild Well, maintains the Well CONTAINED™ subsea containment system at Montrose Port. This system provides the most comprehensive package of subsea emergency response services in the industry. The equipment is staged in a ready-to-deploy state and includes full subsea well intervention systems, including a subsea capping stack, debris removal shears, hardware kits for the subsea application of dispersant and inhibition fluids and other ancillary equipment.

Barry Moir, UK managing director, Wild Well, said, "This facility investment reflects our long-term commitment to support our clients by providing the best-in-class response to a subsea capping and containment incident. Our highly qualified emergency response well control and subsea engineering personnel deliver innovative solutions in a timely manner and our commitment to the existing warehouse and extension build-out will provide an optimum working environment for our Well CONTAINED™ service line, which will be central to our continued success."

LSE Says Equa G Firm One to Watch

Equatorial Guinea-based Alduco Engineering Services, a subsidiary of the Alduco Group of Companies, has been identified as one to watch in the London Stock Exchange Group's 'Companies to Inspire Africa 2019' report.

The report, which was released in January, lists 360 companies from 32 different countries across the continent as new cohorts of fast growing and dynamic private businesses across Africa.

To be included in the list, companies need to be privately held and show an excellent rate of growth and potential to power African development.

"It is an honor to put Equatorial Guinea on the map as a country that has hard working entrepreneurs contributing to the development of not only the country, but also the continent," Alduco Engineering Services Group Managing Director, Alfredo Jones, said upon hearing the news.

Savannah to Raise Cash

Savannah Petroleum intends to conduct an accelerated book build to raise gross proceeds of approximately $23 million by way of a placing of new ordinary shares of £0.001 each in the company. Savannah intends to use the proceeds of the Placing to fund working capital.

At current prices, the new Ordinary Shares issued pursuant to the Placing are expected to represent approximately 7% of its current issued share capital.

Mirabaud Securities and H&P Advisory are acting as joint book runners in relation to the Placing. Shore Capital Stockbrokers is acting as Lead Manager.

Grand Renaissance Initial Capacity Expected Next Year

Initial energy production from the Grand Renaissance dam in Ethiopia is set to begin in 2020, according to Ethiopia's Water and Sanitation Minister Seleshi Bekele.

"We expect the dam to be fully operational by the end of 2022. 750 MW of power is the planned initial production with two turbines by December next year," said Bekele.

The Grand Renaissance Dam will aid the country in meeting its goal of becoming Africa's biggest power exporter. The dam is expected to produce 6,000 MW of power when fully operational.

Source: Ministry of Water, Irrigation and Electricity

Bekele said that the $4 billion dam is 80% complete and the performance of hydro-mechanical work has reached 25%. He added that the Ministry has bought nine turbines and an energy generator out of which some are at the port yet to be delivered.

Construction of the dam, which was formally known as Millennium Dam, began in April 2011 and was expected to be accomplished by 2017. It experienced delays however due in part to the electro-mechanical part of the construction as well as changes in design to accommodate higher generation capacity.

Further, the government has signed an agreement with GE Hydro France, a unit of GE Renewables, to accelerate the completion of the dam. The firm will be paid nearly $61 million to manufacture, fix and test turbine generators.

Sonelgaz to Send Invoices by Text

In Algeria, customers of the National Electricity and Gas Company (Sonelgaz) will soon receive their invoice by phone message (SMS). "An operation is underway to allow Sonelgaz customers to receive their invoice by SMS," announced Mustapha Guitouni, the Minister of Energy.

This is part the company's process of digitizing its operation, particularly as regards the development of the public service and the modernization of its services. Customers will, among other things, know the amount of their bills by calling a toll-free number managed by four centers located in Algiers, Oran, Constantine, and Annaba.

"These centers will also allow clients to submit their benefit requests with a single call for immediate, interactive processing; sparing them a move to commercial and technical agencies," said the Minister, stating that these various measures are aimed at the retention of the company's clientele.

Algeria Plans for Solar Power at Oil & Gas Fields

Algeria plans to issue several tenders for renewable energy projects this year as it seeks to meet growing demand for electricity and save gas for export, an official told Reuters. Solar energy will also be used at oil and gas fields.

The country is looking to increase its power production by 22,000 MW by 2030 with these new solar plants. Tenders will be issued soon for the plants with a capacity of 150 MW.

"We are (also) planning tenders to produce 2,000 MW before the end of 2020," the official said, without offering further details.

"Our development plan is also aimed at maintaining contractual commitments with partners in terms of gas supply," said Noureddine Yassa, head of a National Renewable Energy Development Center set up to develop the sector.

Ethiopia Plans Large-Scale Solar Plants

In Ethiopia, the Ministry of Energy launched a call for tenders for the installation of six large-scale solar power plants. The plants would have a combined capacity of almost 800 MW and be located in the states of Afar, Somali, Oromia and Tigray.

The solar plants are being developed as part of a public-private partnership at an estimated cost of approximately $795 million, which will be partially funded by the government.

These projects are being developed in collaboration with the Scaling Solar program of the International Finance Corporation, a member of the World Bank Group.

The objective of this project is to accelerate the establishment of solar power plants by providing guarantees and financing to investors to reduce the risk of financing.

Isimba Hydro Plant Commissioning

Uganda's Isimba hydroelectric plant was commissioned on January 24, according to the Uganda Electricity Generation Company Limited (UEGCL). The four generators composing the infrastructure had already been running for a few weeks prior to commissioning.

Proscovia Njuki, UEGCL chairman of the board, revealed that the commercial operations of the infrastructure will start in March 2019 and will also mark the beginning of the charges applicable to the government for the plant.

The 183 MW capacity hydroelectric plant was constructed by China International Water & Electric Corporation. Work began in April 2015 and cost more than $567 million.

Work on Congo Power Plant Complete

Maintenance work on the Republic of Congo's Côte Matève power plant is now complete, according to Louis Kanoha Elenga, the director general of the Congo Electric Power (E2C), the national electricity company. This work allowed inhabitants of Brazzaville and Pointe-Noire, who have faced intermittent loadshedding for a six-week period, to have access to electricity for end of year celebrations.

Executed by ENI-Congo, the work consisted of renovating one of the plant's turbines to allow it to operate optimally and to supply its 300 MW nominal capacity, which constitutes 60% of the national electricity production.

Elenga said, even though the extended power cuts will no longer be reported, the plant may be shut down for short periods of time in order to make technical adjustments. Currently the state-utility is testing the equipment.

Madagascar to Double Electricity Output

Madagascar plans to double its electricity production over the next five years. The news was revealed by Roland Ravatomanga, the country's new Minister of Energy, Water and Hydrocarbons, when he took office.

The achievement of this goal will be achieved through five major points, said Ravatonanga. The first is the introduction of new sources of energy - solar, wind, hydroelectric, thermal - in cities already connected to the power grid. This will improve the quality of electricity supply and gradually reduce load shedding.

In addition, in rural areas and localities that are too far off the grid, solar electric kits will be massively distributed at an affordable cost and with payment facilities for the beneficiary localities.

Finally, alternative solutions such as biogas and bioethanol will be introduced to combat air pollution and deforestation due to the use of fuelwood and charcoal as an energy fuel by households.

Sikorsky Helicopters Selected for Mexico Job

Three Sikorsky S-92® helicopters were selected by an unnamed major oil firm operating in the Gulf of Mexico to provide deepwater transportation to platforms offshore Mexico. Three fielded S-92 helicopters will support the client's operations, including crew change and search and rescue.

Source: Lockheed Martin

Sikorsky S-92R

The S-92 operational tempo continues to grow with 2018 fleet flight hours increasing 7% despite the downturn in offshore transportation demand. "We are very happy the customer has selected the S-92 for this important service," said David Martin, Sikorsky vice president of Oil & Gas. "We are respectful of the trust our customers place in us, and we are working hard to ensure this mature and reliable helicopter is also the most economical."

Mexico's Directorate General of Civil Aeronautics approved the offshore and utility type certificate for the Sikorsky S-92A helicopter in November of 2017.

FID on Midia Gas Development Approved

Black Sea Oil & Gas, together with its co-venture partners, Petro Ventures Resources and Gas Plus International, have approved the FID to proceed with the $400 million Midia Gas Development Project (MGD Project), offshore Black Sea.

According to Block Sea Oil & Gas, the FID has been taken in good faith and on the assumption that it and its JV partners will successfully be able to restore all of their rights with respect to the removal of any newly imposed supplemental taxes and fees as well as removing any restrictions, in accordance with EU Directives, on the free movement of gas on a fully liberalized market in order to not only make MGD Project a viable investment, but also to encourage further gas developments in the Black Sea.

The MGD Project, which is the first new offshore gas development project in the Romanian Black Sea to be built after 1989, consists of five offshore production wells (one subsea well at Doina field and four platform wells at Ana field) a subsea gas production system over the Doina well which will be connected through an 18-km pipeline with a new unmanned production platform located over Ana field. A 126-km gas pipeline will link the Ana platform to the shore and to a new onshore gas treatment plant (GTP) in Corbu commune, Constanta county, with a capacity of 1 Bcm per year representing 10% of Romania's consumption. The processed gas will be delivered into the NTS at the gas metering station to be found within the GTP.

LLOG Awards McDermott Stonefly Gig

McDermott International won a sizeable contract award by LLOG Exploration Company for deepwater subsea pipeline tiebacks and structures from the Stonefly development to the Ram Powell platform, located approximately 140 miles southeast of New Orleans, Louisiana.

The scope of work includes project management, installation engineering, subsea structure and spoolbase stalk fabrication, and subsea installation of the subsea infrastructure to support a two-well subsea tieback from the Stonefly development site to the Ram Powell platform via a 60,000 foot 6-inch pipeline at water depths ranging from 3,300 to 4,100 ft. McDermott will also design, fabricate and install a steel catenary riser, a pipeline end manifold, and two in-line sleds.

The Stonefly development includes the Viosca Knoll 999 area where McDermott is scheduled to use its 50-acre spoolbase in Gulfport, Mississippi, for fabrication and reeled solutions. McDermott is scheduled to install the subsea tiebacks and structures using its *North Ocean 105* vessel in Q3 2019. Structure design and installation engineering began in January 2019 in McDermott's Houston office.

The Ram Powell tension leg platform is located in 3,200 feet of water in the Viosca Knoll Area, Block 956, and is capable of processing 60,000 barrels of oil per day and 200 million cubic feet of gas per day.

OPEC and Allies Begin Production Cuts

Last month an OPEC-led block agreed to slash a combined 1.2 million bpd of production in order to boltser crude oil prices that have started to slump in recent months.

Algeria's state-controlled news agency, APS, reported that under its new OPEC quota, the country will have to drop its output by 24,000-25,000 bpd. According to Salah Mekmouche, Sonatrach's upstream executive, the 24,000-25,000 bpd cut back took effect January 1.

Mekmouche said that before the agreement reached by OPEC members and its allies led by Russia was reached last month, Algeria was producing 1.08 million bpd.

Angola and Nigeria will absorb heavy production cuts as well, at 32,000 bpd and 50,000 bpd respectively. The remaining two Big Five African producers, Egypt and Libya, will not be making cuts as Egypt is not an OPEC member and Libya is exempt.

Meanwhile, other members and non-members from Africa – including Congo, Equatorial Guinea, Gabon, South Sudan and Sudan – will also cut back some of their production to assist in this effort to stabilize pricing by leveling the supply and demand equation.

Saudi Arabia will take the biggest hit, taking over 300,000 bpd off the market, and non-OPEC member Russia is expected to pare down 230,000 bpd.

Saipem Awarded EPIC in Saudi

Saipem was awarded two EPIC contracts assigned by Saudi Aramco for a total amount of approximately $1.3 billion as part of the Long-Term Agreement for offshore activities in Saudi Arabia, renewed in 2015 and in force until 2021.

These two contracts refer to, respectively, the development of offshore fields in Berri and Marjan, located in the Arabian Gulf, which are among the most important offshore fields in the Middle East.

Saipem activities include the design, engineering, procurement, construction, installation and implementation of subsea systems in addition to the laying of pipelines, subsea cables and umbilicals, platform decks and jackets.

Rowan Norway Use Secured by COPSAS

Rowan Companies' *Rowan Norway*, an N-Class ultra-harsh environment jack-up rig, was awarded a contract in Norway by ConocoPhillips Skandinavia AS (COPSAS) for an estimated duration of seven months. The contract is expected to commence in Q3 of this year; subject to partner approval.

Following the initial contract term, COPSAS has two options. The first option has an estimated duration of five months and the second an estimated duration of nine months. The *Rowan Norway* is currently under contract with Turkish Petroleum in the Mediterranean Sea until approximately late-April 2019.

Unique and POSH Partner Up

Unique Group entered into a contract with Singapore-based POSH Subsea to offer integrated diving solutions. As part of the agreement, Unique Group will design, manufacture and deliver Classed Air and Saturation Dive systems for integration on POSH's vessels.

Source: Unique Group

POSH Mallard, a Multi-Purpose Support Vessel (MPSV)

Under this partnership, Unique Group will be supplying a holistic suite of classed air & saturation diving equipment, compliant to the stringent Oil and Gas Producers (OGP) 468 and International Marine Contractors Association (IMCA) guidelines, as well as consumables and technical support during and post installation, spanning across a two-year period. The Unique Equipment Manager (UEM), a digitalized planned maintenance system integrated with the dive systems will enable POSH to track the condition of the equipment more accurately. thereby minimizing operational downtime.

Speaking about this partnership, Harry Gandhi, CEO of Unique Group, commented: "We are pleased to announce our partnership with POSH, an industry-leading offshore marine operator. This bears witness to our compliance with their stringent requirements and is yet another testament to our track record for delivering timely and quality solutions."

Tendeka's AICDs Contracted in the Middle East

Tendeka has secured a multi-million-pound contract with an unnamed major national oil company in the Middle East. The agreement will see Tendeka provide reservoir modeling and the installation of its FloSure Autonomous Inflow Control Devices (AICDs) to boost production and improve reservoir performance in several mature fields.

Tendeka will perform reservoir simulations for each well, working closely with the client to ensure optimum reservoir performance, with the technology helping in the reduction of unwanted fluid production.

Having carried out several similar projects in the region, the company has vast experience with the challenges of brown fields and carbonate reservoir that form a large proportion of oil fields in the Middle East.

Tendeka is a world leader in Inflow Control technology and has installed more than 7,000 passive ICDs and more than 28,000 autonomous ICDs globally.

XSIGHT Wins ExxonMobil's Blue Whale Project in Vietnam

Saipem's XSIGHT division was awarded a new onshore-offshore FEED contract for the Ca Voi Xanh (Blue Whale) project by ExxonMobil Exploration and Production Vietnam Ltd. (EMEPVL) and its JV partners PetroVietnam and PetroVietnam Exploration Production Corp.

The project encompasses the design of the facilities for the development of an offshore gas and condensate reservoir located within Block 118, offshore Vietnam. The treated gas will be delivered to two power complexes, each containing two power trains.

Saipem will provide the FEED for the project that consists of an offshore platform, offshore gas and condensate pipelines, offshore fiber optic cabling, an onshore gas treatment plant (GTP), onshore pipelines and an onshore condensate offloading facility.

The Ca Voi Xanh development project will provide a competitive and cleaner energy source to Vietnam.

CAOMM Signs Contract with ULO Systems

Control & Applications Offshore Marine Management (CAOMM) signed a contract with ULO Systems for the installation of 12,000 concrete mattresses utilizing sister company Offshore Marine Management's (OMM) Multi Mattress Deployment System, MDS^3.

The contract, due to be delivered in Q1 2019, covers the installation of 12,000 concrete mattresses, manufactured by ULO themselves, to minimize erosion by protecting a river bank on-site at a Nuclear Plant in a rural area of Bangladesh. The supply of the MDS^3 system will be supported by specialist personnel provided by sister company, Offshore Marine People & Academy (OMPA).

The MDS^3 system most recently completed a mattress installation to protect subsea cable on the Scilly Isles connector project off the coast of the United Kingdom. The use of the MDS^3 on these two projects shows the capability and versatility of the system on a wide range of projects and environments, while remaining a cost-effective solution.

EPCIC for Esso Australia Goes to OneSubsea and Subsea 7 JV

Subsea Integration Alliance will perform the integrated subsea engineering, procurement, construction, installation and commissioning (EPCIC) for Esso Australia Pty Ltd. The contract represents the first integrated subsea project for Subsea Integration Alliance in Australia combining OneSubsea and Subsea 7 expertise in subsea production systems (SPS) and subsea umbilical, riser and flowline (SURF) systems.

Subsea Integration Alliance work scope includes the EPCI of two production wells. The wells are in a water depth of approximately 45 meters and will be tied back to the Longford onshore gas plants. Project management and engineering will be provided by OneSubsea and Subsea 7 from local offices in Perth and Melbourne, Australia. Offshore installation activities are scheduled for 2020.

The Subsea 7 scope includes project management, engineering, procurement, construction and installation of two production wells and a single electro hydraulic umbilical from the Barracouta Platform to the West Barracouta drill center.

The One Subsea scope includes the provision of two vertical mono bore on-wellhead production trees, wellheads, controls and installation and commissioning services.

Genel Acquires Kurdistan Blocks from Chevron

GenelEnergy reached an agreement to acquire stakes in the Chevron-operated Sarta and Qara Dagh blocks, in the Kurdistan Region of Iraq. Genel will acquire 30% equity in the Sarta license by paying a 50% share of ongoing field development costs until a specific production target is reached, together with a success fee payable on achievement of a production milestone. Chevron will retain a 50% interest in the Sarta license and the Kurdistan Regional Government will hold the remaining 20%.

Drilling began on the project's first appraisal well, Sarta-3, in Q4 2017. The well was successfully completed and tested during the second quarter of 2018. Both the Sarta-3 and the Sarta-2 well individually tested at rates of around 7,500 bpd. The first phase of development is expected to see these wells placed on production.

Genel will acquire 40% equity in the Qara Dagh appraisal license and become the operator through a carry arrangement. Chevron will retain 40% of the equity, with the KRG holding the remaining 20%. The Qara Dagh-2 well is set to be drilled in 2020. The Qara Dagh-1 well, completed in 2011, tested oil in two zones from the Shiranish formation.

Closing is subject to approval from the Kurdistan Regional Government.

ExxonMobil and Partners Knock Out 11 and 12 Offshore Guyana

ExxonMobil, Hess Corp., and CNOOC made two new discoveries off the coast of Guyana. The success of the Tilapia-1 and Haimara-1 wells bring the total number of discoveries on the Stabroek Block to 12. The latest discoveries build on the previously announced estimated recoverable resource of 5 billion boe on the Stabroek block.

Tilapia-1 is the fourth discovery in the Turbot area that includes the Turbot, Longtail and Pluma discoveries. Tilapia-1 encountered approximately 305 ft of high-quality oil-bearing sandstone reservoir and was drilled to a depth of 18,786 ft in 5,850 ft of water.

Source: Noble Drilling

Noble Tom Madden

The *Noble Tom Madden* drillship began drilling the well on January 7 and will next drill the Yellowtail-1 well, approximately six miles west of Tilapia-1 in the Turbot area. The baseline 4-D seismic data acquisition is underway.

The Haimara-1 well encountered approximately 207 ft of high-quality, gas-condensate bearing sandstone reservoir. The well was drilled to a depth of 18,289 ft in 4,590 ft of water. It is located approximately 19 miles east of the Pluma-1 discovery and is a potential new area for development. The *Stena Carron* drillship began drilling the well on January 3 and will next return to the Longtail discovery to complete a well test. There is potential for at least five FPSOs on the Stabroek Block producing more than 750,000 bpd by 2025. The Liza Phase 1 development is progressing on schedule and is expected to begin producing up to 120,000 bpd in early 2020, utilizing the *Liza Destiny FPSO*.

Source: Stena Drilling

Stena Carron

Liza Phase 2 is expected to startup by mid-2022. Pending government and regulatory approvals, sanctioning is expected in the first quarter of 2019 for the project, which will use a second FPSO designed to produce up to 220,000 bpd. Sanctioning of a third development, Payara, is also expected in 2019, and startup is expected as early as 2023.

African Rig Count

Country	2018		
	October	November	December
Algeria	46	46	50
Angola	4	5	5
Benin	0	0	0
Cameroon	1	1	1
Chad	7	7	7
Congo	4	4	4
Congo (DRC)	0	0	0
Cote D'Ivoire	1	1	1
Djibouti	0	2	2
Egypt	25	26	27
Equatorial Guinea	0	0	0
Ethiopia	2	2	2
Gabon	4	4	4
Ghana	0	0	0
Guinea	0	0	0
Kenya	8	8	8
Liberia	0	0	0
Libya	9	9	9
Mauritania	0	0	0
Morocco	1	1	1
Mozambique	0	0	0
Namibia	0	0	0
Niger	1	1	1
Nigeria	15	9	11
Senegal	0	0	0
Sierra Leone	0	0	0
South Africa	0	0	0
Sudan*	0	0	0
Tanzania	0	0	0
Togo	0	0	0
Tunisia	3	3	2
Uganda	0	0	0

Source: BHGE

*Data not available

Africa Production of Crude Oil

(including Lease Condensate, Thousand Barrels/Day)

Country	2018		
	October	November	December
Algeria	1054	1056	1051
Angola	1533	1500	1490
Cameroon	80	81	82
Chad	90	100	99
Congo (Brazzaville)	324	310	329
Congo (Kinshasa)	20	20	20
Cote d'Ivoire (Ivory Coast)	27	28	28
Egypt	640	640	640
Equatorial Guinea	131	121	108
Gabon	186	170	197
Ghana	121	121	120
Libya	1114	1100	928
Mauritania	0	0	0
Morocco	0.5	0.5	0.5
Niger	20	20	20
Nigeria	1751	1739	1750
South Africa	3	3	3
Sudan and South Sudan	225	229	230
Tunisia	48	48	48
Total Africa	7367.5	7286.5	7143.5

Various sources including EIA, IEA and OPEC

World Oil Production

(million barrels per day)

Country	2018		
	October	November	December
Americas	23.48	23.52	23.33
Canada	5.28	5.31	5.22
Chile	0.01	0.01	0.01
Mexico	1.97	1.94	1.97
United States	16.22	16.27	16.13
Asia Oceania	0.45	0.45	0.45
Australia	0.38	0.38	0.38
Others	0.07	0.07	0.07
Europe	3.41	3.41	3.41
Norway	1.86	1.88	1.85
UK	1.03	1.01	1.04
Others	0.52	0.51	0.52
Total OECD	27.34	27.37	27.19
Total Non OECD	29.36	29.37	29.46

Source: IEA Oil Market Report

OPEC Oil Production

(Thousand Barrels/Day*)

Country	2018		
	October	November	December
Algeria	1054	1056	1051
Angola	1533	1500	1490
Congo	324	310	329
Ecuador	525	522	524
Equatorial Guinea	131	121	108
Gabon	186	170	197
Iran, I.R.	3296	2928	2769
Iraq	4653	4626	4714
Kuwait	2764	2772	2800
Libya	1114	1100	928
Nigeria	1751	1739	1750
Saudi Arabia	10630	11021	10553
UAE	3160	3283	3218
Venezuela	1171	1181	1148
TOTAL OPEC	32900	32328	31578
OPEC exluding Iraq	28247	27702	26864

Source: OPEC

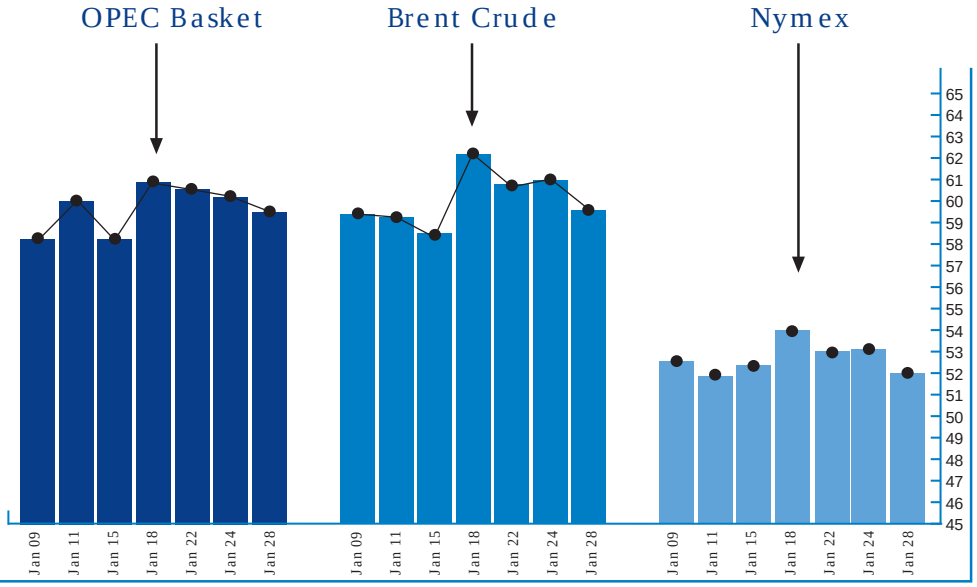
** Based on secondary sources*

International Rig Counts

AREA	Last Count	Count	Change From Prior Count	Date of Prior Count	Change from Last Year	Date of Last Year's Count
US	Feb 1, 2019	1045	-14	Jan 24, 2019	99	Feb 2, 2018
CANADA	Feb 1, 2019	243	11	Jan 24, 2019	-99	Feb 2, 2018
INTERNATIONAL	Dec, 2018	1025	34	Nov, 2018	71	Dec, 2017

Oil Prices

January 09	$
OPEC Basket	58.22
Brent Crude	59.46
Nymex	52.69
January 11	
OPEC Basket	60.00
Brent Crude	59.24
Nymex	51.91
January 15	
OPEC Basket	58.24
Brent Crude	58.65
Nymex	52.39
January 18	
OPEC Basket	60.90
Brent Crude	62.04
Nymex	54.04
January 22	
OPEC Basket	60.66
Brent Crude	60.90
Nymex	53.01
January 24	
OPEC Basket	60.22
Brent Crude	61.09
Nymex	53.13
January 28	
OPEC Basket	59.57
Brent Crude	59.71
Nymex	51.99

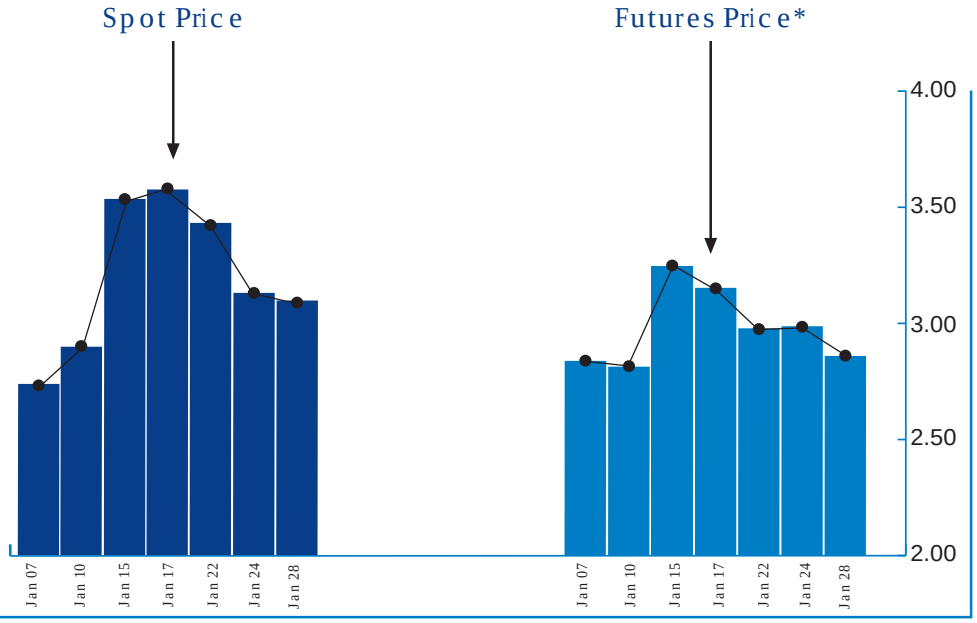


Data compiled by Petroleum Africa from various sources including OPEC, EIA and others

Gas Prices

January 07	$
Henry Hub	2.74
New York	2.84
January 10	
Henry Hub	2.95
New York	2.81
January 15	
Henry Hub	3.54
New York	3.24
January 17	
Henry Hub	3.58
New York	3.17
January 22	
Henry Hub	3.43
New York	2.97
January 24	
Henry Hub	3.13
New York	2.99
January 28	
Henry Hub	3.05
New York	2.87

Dollars per BTU



CONFERENCES

FEBRUARY 2019			
6-7	2nd Morocco Oil & Gas Summit 2019	Marrakesh, Morocco	www.morocco-summit.com
11-13	Egypt Petroleum Show 2019 (EGYPS)	Cairo, Egypt	www.egyps.com
25-27	Powering Africa Summit 2019 (PAS 2019)	Miami, FL	www.poweringafrica-summit.com
26-28	ME-TECH 2019 – Middle East Technology Forum for Refining & Petrochemicals	Abu Dhabi, UAE	www.me-tech.biz
MARCH 2019			
10-13	North Africa Petroleum Exhibition and Conference (NAPEC)	Algeria, Algeria	www.napec-dz.com
25-26	Gulf Safety Forum 2019	Bahrain	www.gulfsafetyforum.com v
26-27	Power & Electricity World 2019	Johannesburg, South Africa	www.terrapinn.com
27-28	OPEX MENA 2019 – Operational Excellence In Oil, Gas & Petrochemicals Conference	Bahrain	www.opex.biz
APRIL 2019			
1-5	LNG 2019	Shanghai, China	www.lng2019.com
1-5	APPO Cape VII (7th African Petroleum Producers Organization Conference & Exhibition)	Malabo, Equatorial Guinea	www.africaoilandpower.com
MAY 2019			
2-3	12th Annual Sub-Saharan Africa Oil & Gas Conference 2019	Houston, TX	www.energycorporateafrica.com
27-29	IDW 2019 – International Downstream Week	Sardinia, Italy	www.europetro.com
JUNE 2019			
4-5	Offshore Well Intervention – West Africa	Accra, Ghana	bit.ly/2S6yT9J
4-6	Angola Oil & Gas 2019	Luanda, Angola	www.africaoilandpower.com
11-11	London Investor Forum 2019	London, UK	www.africaoilandpower.com
JULY 2019			
1-4	Nigeria Oil & Gas	Abuja, Nigeria	www.cwcnog.com
OCTOBER 2019			
2-4	AOP 2019 (Africa Oil & Power)	Cape Town, South Africa	www.africaoilandpower.com
28-29	Algeria Future Energy	Algiers, Algeria	www.algeria-future-energy.com
TBA	Tanzania Oil & Gas Congress	Dar Es Salaam, Tanzania	www.cwctog.com
NOVEMBER 2019			
20-21	6th Mozambique Gas Summit & Exhibition	Maputo, Mozambique	www.mozambique-gas-summit.com
26-27	GECF 5th Gas Summit	Malabo, Equatorial Guinea	www.yearofenergy2019.com
DECEMBER 2019			
2-5	9th Practical Nigerian Content	Yenagoa, Nigeria	www.cwcpnc.com
10-11	BBTC MENA 2019 – Bottom of the Barrel Technology Conference	Bahrain	www.bbtc-mena.biz

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