

Oil Review

Oil · Gas · Petrochemicals

Africa

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Oil market: What's in store for 2022?

Angola gearing up exploration to halt production decline

Enhanced oil recovery, commodity trading, managing pipeline corrosion, recruitment trends in oil and gas

News and the latest product innovations



*Aldworth Mbalati,
CEO of DNG Energy,
on Smart Gas (p34)*

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The oil market in 2022 and beyond.
Image credit: Adobe Stock

EDITOR'S NOTE

AS THE OIL and gas industry shows signs of recovery, oil prices also staged a significant recovery last year on both demand and supply sides, thanks to uptick in global economy, the vaccination process that led to increased mobility, and acute shortage of natural gas, which boosted the demand for crude as a substitute. Our economist Moin Siddiqi takes a forensic look (p9) to analyse what lies ahead in 2022 and beyond.

In the meantime, Angola's oil industry, which accounts for one-third of GDP, plus more than 90% of exports by value, has undergone significant restructuring since 2017 – leading to more business-friendly and streamline business structure. Turn on to page 11 to know how Angola is gearing up oil exploration to halt production decline.

This issue also features topic such as technological trends in corrosion prevention, use of AI and ML in oil and gas and an exclusive interview with DNG Energy's CEO Aldworth Mbalati (p34) about DNG Smart Gas as an alternative to traditional fuels like diesel and petrol.

Deblina Roy

Editor, Oil Review Africa

CONTENTS

NEWS

- 4 Calendar of oil and gas events**
A preview of SAIPEC 2022

COVER STORY

- 9 Crude prices gained nearly 60% in 2021, whilst global oil demand has already exceeded the threshold of 100mn bpd last seen before the pandemic, BP estimates. Therefore, 2022 could be the "post-pandemic" year for crude market, with demand rebounding to 100% of pre-Covid levels.**

GEOGRAPHICAL ANALYSIS

- 11 Production in Angola plummeted to 1.12mn-bpd in 2021 (lowest in a decade), which represented a decline of 37% or 660,000-bpd since 2015. Output peaked at nearly 2mn-bpd in 2008, when Angola was viewed as hotbed of drilling and exploration activity in sub-**



Saharan Africa. The country is banking heavily on output revival by supermajors (BP, Eni, Total Energies and ExxonMobil) – all of which have some oil projects planned.

TECHNOLOGY & OPERATIONS

- 14 Towards future net zero portfolios**



- 16 EOR**
The latest from Africa

- 18 Logistics**
Is Senegal improving?

- 24 Paints and coatings**
Mitigating the risk of corrosion

INTERVIEW

- 34 Aldworth Mbalati, CEO of DNG Energy, discusses how DNG Smart Gas is providing a cleaner alternative to traditional fuels like diesel and petrol.**

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Executives Calendar 2022

FEBRUARY

22-24 International Energy Week

Online and London, UK
www.ieweek.co.uk

22-24 SAIPEC

Lagos, Nigeria
www.saipec-event.com/en

27 Feb-3 Mar NIES

Abuja, Nigeria
www.nigeriaenergysummit.com

MARCH

29-30 MMEC

Maputo, Mozambique
www.mozambiqueoilmining.com/

APRIL

14-15 ICNGO 2022

Cape Town, South Africa
www.waset.org/natural-gas-and-oil-conference-in-april-2022-in-cape-town

MAY

19-21 9th Oil & Gas Africa

Nairobi, Kenya
www.expogr.com/kenyaenergy

JUNE

21-23 7th East Africa Oil and Gas Africa

Dar Es Salaam, Tanzania
www.eaogs.com/en

JULY

4-7 21st Nigeria Oil & Gas Conference & Exhibition

Abuja, Nigeria
www.nogevent.com

Readers should verify dates and location with sponsoring organisations, as this information is sometimes subject to change.

SSA's oil, gas and energy network to convene in Lagos

SUB SAHARAN AFRICA'S entire oil, gas and energy network will convene in Lagos from 22-24 February for the sixth edition of the SAIPEC exhibition to visit, interact and develop business with more than 100 exhibitors.

The exhibitors participating this year, each showcasing industry solutions and innovative technologies include organisations such as SNEPCo, Total, H-PTP Energy Services Limited, SAIPEM, Ponticelli, Westfield Energy, Gambia National Petroleum Corporation, Uganda National Oil Company, NCDMB, INP Mozambique and many more.

The SAIPEC 2022 exhibition and conference have been organised in adherence with current government requirements in Nigeria.

This includes restricted entrance, event team testing, sanitisation facilities and a reduced attendee number in the venue as outlined in further details below. All attendees will be notified via email should these requirements change.

This protocol is a revision of the Travel Protocol released on 22 October 2021. As per the protocol:

- ◆ COVID-19 PCR test to be done within 48 hours of departure for all travellers
- ◆ Post-arrival Day-2 COVID-19 PCR test for all travellers

The Organising Committee and industry experts are driving special technical content and streams as part of the programme for SAIPEC 2022. This will feature a number of plenary sessions with an emphasis on current technical challenges and opportunities within the oil and gas sector, as well as the latest in exploration and production technologies. In addition, specialised technical workshops will cover

Image Credit: SAIPEC



The SAIPEC 2022 exhibition and conference have been organised in adherence with current government requirements in Nigeria.

both line and support activities. A committee of industry experts will create the technical conference session categories, driving the content of the conference forward, ensuring the most innovative and thought-provoking content is available to delegates.

Some of the speakers at the conference include: Nicolas Odinuwe, chairman of Petroleum Technology Association of Nigeria (PETAN); Simbi K Wabote, executive secretary Nigerian Content Development and Monitoring Board (NCDMB); Dr Omar Farouk Ibrahim, secretary general of the African Petroleum Producers' Organization (APPO) and more.

Uganda to be among top oil producers in Africa

AS A FINAL investment decision (FID) has been taken on Lake Albert Resources Development Project, Uganda is expected to emerge in the top six oil producers in Africa, according to GlobalData.

Rami Khrais, oil and gas analyst at GlobalData, said, "The FID for Lake Albert oil development is by far the second largest FID taken in the oil and gas industry in the last two years. Further, the project will be one of the largest oil developments seen in Africa over the last 20 years, expecting to recover more than 1.5 billion barrels of oil."

"If the production from Tilenga and Kingfisher is materialised according to the planned schedule, Uganda will be able to produce approximately 230,000 bpd by the end of the decade. Tilenga will contribute via a Lake Albert pipeline with a 213,000 bpd capacity from the north. Kingfisher is expected to add another 40,000 bpd from the south, before the heavy oil enters EACOP heated pipeline. Uganda's production is currently zero, so production from these two fields alone will put the country among the top six crude producers in Africa," he added.

"If the project is successful, this cross-country collaboration can bring further infrastructure development and trading, such as the earlier envisaged Tanzania-Uganda trans-border gas pipeline, which had been stalled since 2016. This could potentially market Mozambique gas across Tanzania and Uganda for domestic use, seeing that Eni's Coral South will finally come on stream later this year."

Dangote refinery to start production in Q3 2022

NIGERIA'S DANGOTE OIL refinery, which is owned by the Dangote Group and is under construction in Lekki, Nigeria, is expected to start processing crude in the Q3 2022.

In a briefing at the Lagos plant site, Aliko Dangote, chairman of Dangote Industries Limited, said that the refinery's mechanical work is completed.

As reported in Bloomberg, the plant is set to start with 540,000 bpd processing capacity. Full production is expected by the end of 2022 or beginning of 2023.

According to African Petroleum Producers Organisation (APPO), the Nigerian oil refinery will reduce Africa's petrochemical product importation by 36%.

Dr Omar Farouk Ibrahim, secretary-general of APPO, stated that the Dangote oil refinery is also set to supply more than 12%



Image Credit: Adobe Stock

Full production is expected by the end of 2022 or beginning of 2023.

of Africa's products demand once it is operational.

The Lagos-based facility, costing approximately US\$19bn to be built, has an installed capacity

of 650,000 bpd. The refinery aims to broadly meet the fuel demand of the West African country while turning Nigeria into one of the main exporters of refined crude.

TotalEnergies signs MoU with Rwanda Development Board

TOTALENERGIES HAS SIGNED a MoU with Rwanda Development Board (RDB) to deploy its multi-energy offer and contribute to the development of the energy sector.

The scope of the agreement covers in particular:

- ♦ The energy products

distribution (including LPG, and electric charging)

- ♦ The supply of LPG as a substitute for burning biomass.
- ♦ The renewable hydro-electricity generation.
- ♦ The development of power storage solutions for the

electrical network.

- ♦ The development of natural based solution for carbon storage.
- ♦ The implementation of education and training programmes on new energies and the energy transition.

Further to this, TotalEnergies has announced the incorporation of a local branch, TotalEnergies Marketing Rwanda Ltd, and the opening of a permanent representation office in Kigali.

"This collaboration agreement illustrates TotalEnergies' commitment to deploying its multi-energy strategy in Africa, particularly in Rwanda, a country with a booming economy," said Patrick Pouyanné, chairman and CEO of TotalEnergies.



Image Credit: Adobe Stock

The scope of the agreement will cover the distribution of energy products, including LPG and electric charging.

The Gambia launches RFP for A1 licensing round

THE MINISTRY OF Petroleum and Energy, the Gambia, has launched the licensing round for Block A1 and the deadline for submission of bids is the 6 June 2022.

The request for proposal (RFP) is available for download on the Ministry of Petroleum's (Ministry) website. Bidders will be required to submit bids electronically through a data room platform.

"Our key objective in designing the licensing round is to ensure an attractive fiscal regime with low entry conditions for bidders, transparent procurement process and participation rules, and clear technical and financial minimum qualification criteria. In accordance with best practice there will be one biddable term, which is further explained in RFP," said the permanent secretary at the Ministry of Petroleum and Energy, Lamin Camara, the Gambia.

Jerreh Barrow, director general of Petroleum Commission, the Gambia, added, "Our government team has the necessary experience and is well prepared to repeat the success of the 2018 licensing round, and to once more, start and finish the licensing round within the timeframe (February 2021 to June 2022) announced."

"The Government wishes to seize this opportunity to thank BP for their strong



The government is aiming to repeat the success of the 2018 licensing round.

collaboration during the past two years and their excellent technical work on the block. We are excited to open our doors again to the international oil community, and look forward to working with a new partner in Block A1," said Fafa Sanyang, minister of petroleum and energy.

ExxonMobil streamlines structure to enhance value and reduce costs

EXXONMOBIL IS STREAMLINING its business structure further by combining chemical and downstream companies and centralising technology and engineering, and other support services, to better support customers, enhance performance and grow value.

"Our transformed business structure enables us to more fully leverage the corporation's scale, integration, technology advantages, and the skills and capabilities of our talented workforce, to better serve our customers," said Darren Woods, chairman and chief executive officer.

"Aligning our businesses along market-focused value chains and centralising service delivery, provides the flexibility to ensure our most capable resources are applied to the highest corporate priorities and positions us to deliver greater shareholder returns."

Effective 1 April, the company will be organised along three business lines – ExxonMobil Upstream Company, ExxonMobil Product Solutions and ExxonMobil Low Carbon Solutions, supported by a single technology organisation, ExxonMobil Technology and Engineering, and other centralised service-delivery groups providing like capabilities.

The move is a part of the company's strategy to build globally competitive businesses that lead industry in earnings and cash flow growth, operating performance and the energy transition.

Bartosz Kozik is global Dressta sales director

DRESSTA, THE WORLD renowned, full-line dozer manufacturer, has announced the appointment of Bartosz Kozik as global Dressta sales director.

He has joined LiuGong Dressta Machinery team and will be responsible for developing and implementing Dressta's global sales strategy and managing and expanding its sales and distribution channels.

Bartosz brings with him more than 18 years of commercial and strategic experience, having enjoyed senior roles at Volvo CE, Ammann, Ingersoll-Rand, and most recently, as European Business Director for Holms Attachments.

According to Howard Dale, president of the board at LiuGong Dressta Machinery, "We are delighted to welcome Bartosz to the Dressta team. He joins us



He has joined LiuGong Dressta Machinery team.

at an exciting time of investment, expansion and growth. We are launching a full line-up of next generation dozers including our

new TD-15M and our all new, Red Dot award winning TD-16N. It's our strongest product portfolio to date and we are confident Bartosz's proven ability and enthusiasm will help to take Dressta to the next level."

Commenting on his new position, Bartosz said, "I'm honored to be joining the Dressta team. The Dressta brand is one of the most respected brands in the construction equipment industry with a great history, amazing people and a bright future. I am excited to have the opportunity to help shape the next chapter in its story."

Dressta is redefining crawler dozer productivity and durability with its customer focused approach to design and manufacturing. Customer satisfaction has always been a top priority.

Mozambique Oil and Gas Chamber rebrands

THE MOZAMBIQUE OIL and Gas Chamber, in a move to promote inclusivity and offer support to all facets of the Mozambican energy sector, has announced that it will be rebranding to the Mozambique Energy Chamber.

The rebranding marks a turning point for the organisation as it moves to accelerate country-wide oil, gas and renewable energy growth in a post-pandemic, energy transition environment.

Within the natural gas industry, the chamber has dedicated itself to helping establish an enabling environment for international investors, while at the same time supporting national companies across the value chain increase their participation in the sector.

By ensuring domestic companies have access to opportunities in small, medium and large-scale project developments, particularly regarding gas-to-power, liquefied natural gas and distribution, the chamber has reaffirmed its commitment to Mozambique's socioeconomic growth. The company will now be expanding its portfolio, offering support across a myriad of sectors.

"The chamber has always been a strong supporter of the country's energy progress and now, with the rebrand, will be even better positioned to serve the entire industry and its value chains," commented Florival Mucave, executive chair of the Mozambique Energy Chamber.

Through the rebrand, the organisation has made the energy transition a priority while continuing to promote the needs of the Mozambican people.

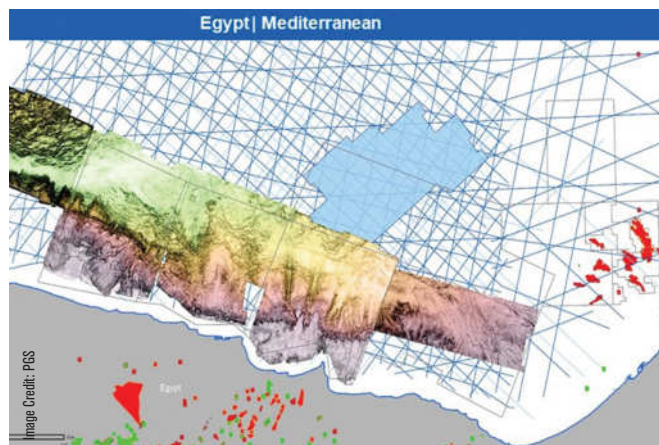
PGS adds five seismic surveys for Egypt

PGS HAS ADDED five 3D seismic surveys to its data library for offshore Egypt, to create broadband 3D coverage of more than 18,700 sq km in recently awarded nearshore license blocks.

The five surveys were by PGS, in collaboration with EGAS, as part of an extensive 3D GeoStreamer data acquisition and imaging campaign in the Herodotus Basin in Egypt's West Mediterranean Sea area.

The 3D data provides detailed insights into opportunities that complement the regional geology and structural foundation provided by MultiClient 2D seismic available for the region. This enables operators in this area to identify prospects that are best aligned with their exploration goals.

The surveys cover several different geological domains. These include the shelf area,



The time-migrated data is available now, while final depth data will be ready in May 2022.

which is likely to rank highly as a focus for initial targets as it is an extension of the onshore western desert plays. Farther into the basin, there is the potential for shelf-edge structures and carbonate buildups.

In the deeper water areas,

plays relating to pre-Messinian salt structures and pinch-out features against the shelf edge are likely to be a focus for exploration. The variety of play types available and water depths will appeal to different company risk profiles.

Inmarsat partners RLTT to deliver IoT services for the oil and gas community

INMARSAT, ONE OF the global leaders in mobile satellite communications, has announced a distribution partnership with Libyan telecoms operator, Rawafed Libya for Telecommunications and Technology (RLTT).

RLTT's specialist 'Digital Oilfields' business unit will use Inmarsat's IsatData Pro (IDP)

and BGAN to provide secure, satellite-based data services to oil and gas companies operating in Libya. Digital Oilfields provides always-on remote telematic and CCTV monitoring of vital infrastructure including wellheads at oil and gas drilling sites as well as production sites across the country.

The services are delivered

through Inmarsat's ELERA L-band connectivity network and benefit from ultra-reliable 99.9% availability, security and small-form, robust terminals.

Taha Ellafi, chairman at RLTT, commented, "Operators across the country are digitalising their operations to increase efficiency and output and improve on-site safety and security for staff. Our new partnership with Inmarsat puts RLTT in an excellent position to take full advantage of this growth opportunity. Working with Inmarsat, we can provide remote security monitoring to drilling and production facilities across the country – including inaccessible locations beyond the reach of terrestrial fixed and mobile networks."



Pharos Energy signs third amendment to El Fayum concession agreement

PHAROS ENERGY HAS signed the third amendment to the El Fayum concession agreement with the government of Egypt.

The agreement has become effective upon signature, with retroactive application of the improved fiscal terms as from November 2020.

More specifically, under the new terms, the cost recovery petroleum percentage (i.e. the share of gross revenues that is available for the contractor to recover its costs) will be increased from 30% to 40%, allowing Pharos a significantly faster recovery of all its past and future investments.

In return, Pharos has agreed to waive its rights to recover a portion of the past costs pool US\$115mn and reduce its share of excess cost recovery petroleum from 15% to 7.5%.

While in full cost recovery mode, the contractor's share of revenue increases from around 42% to around 50% as from November 2020, significantly lowering the development project break-even. The arrangements will strongly encourage new exploration and development investments, aimed at maintaining and increasing production rates and optimising resources, to the mutual benefit of Egypt



Image Credit: Adhwa Shuck

The third amendment also grants the contractor a three-and-a-half-year extension to the exploration licence term.

and the company.

The third amendment also grants the contractor a three-and-a-half-year extension to the exploration licence term, with an additional obligation on the contractor to drill two exploration wells and acquire a 3D seismic survey in the northern area of the licence.

Upstream M&A deals reached a three-year high of US\$181bn in 2021

GLOBAL UPSTREAM MERGER and acquisition (M&A) deals rebounded to pre-Covid-19 levels in 2021, reaching a total of US\$181bn, a 70% increase over 2020, according to Rystad Energy research.

The total deal value for 2021 was the highest in three years and almost reached the highs seen in 2017 and 2018.

Deals valued at more than US\$1bn accounted for US\$126bn, or 70%, of the global total. The share of US\$1bn-plus deals rose almost three-fold, with 35 such deals announced in 2021.

Out of the US\$1bn-plus deals, 13 were company acquisitions together valued at around US\$65bn. Two large Australia-focused mergers – one between

Santos and Oil Search and another between Woodside Petroleum and BHP – contributed about US\$22bn, while other US\$1bn-plus company acquisitions were focused on North American assets.

The share of resources sold in deals shifted in 2021, with gas accounting for 56% of all traded resources, a sizeable jump from the 43% share it had in 2020. Oil accounted for 31%, and natural gas liquids came in at 9%. This shift was primarily driven by the North American acquisitions in 2021.

“With a strong potential deal pipeline, continuous pressure on companies to transform amid a global push to lower carbon emissions while simultaneously delivering profitable oil and gas

production, and an average oil price of above US\$60 per barrel expected for 2022, the upstream M&A market is likely to stay active for the foreseeable future,” said Ilka Haarmann, senior analyst at Rystad Energy.

Company acquisitions totalled US\$76bn, around 42% of the global announced deal value in 2021, a drop in share compared with 2020 when purchases accounted for around 57% of the total deal values. The largest company acquisition by deal value was the merger of Cimarex Energy with Cabot Oil & Gas, which was valued at around US\$17bn. Following suit with most other North American acquisitions announced in 2021, the deal agreement was signed in the first half of the year.

Nigeria's Ministry of Petroleum Resources partners with African Energy Week 2022

NIGERIA'S MINISTRY OF Petroleum Resources has partnered with African Energy Week (AEW) 2022, taking place in Cape Town from 18-21 October.

AEW 2022 extends the narrative of making energy poverty history by 2030.

More than 36 billion barrels of crude oil reserves and 200 tcf of natural gas have made Nigeria an attractive market for hydrocarbon exploration and production. However, it has been the dedication and determination of the Ministry of Petroleum Resources that has made the sector so successful. From drafting and implementing progressive legislature such as the Petroleum Industry Bill (PIB) – implemented in 2021 – to driving African gas monetisation through declarations such as the Decade of Gas Initiative, the Ministry, under the guidance of HE chief Timipre Sylva, minister of state for petroleum, has established the country as a top African producer and globally competitive energy market.

The enhancement of domestic oil company participation; the scaling-up of production through refinery developments such as the Dangote Refinery; and the incentivisation of exploration through the launching of a marginal field bid licensing round has further cemented the country's position as the largest oil producer in sub-Saharan Africa.

WHAT'S IN STORE FOR THE OIL MARKET IN 2022?

In the aftermath of the 2020 worst-ever recession in the petroleum industry's history, oil prices staged a significant recovery last year on both demand and supply sides, thanks to an uptick in the global economy, the vaccination process that led to increased mobility, and acute shortage of natural gas, which boosted the demand for crude as a substitute.

CRUDE PRICES GAINED nearly 60% in 2021, whilst global oil demand has already exceeded the threshold of 100mn bpd last seen before the pandemic, BP estimates. Therefore, 2022 could be the "post-pandemic" year for the crude market, with demand rebounding to 100% of pre-Covid levels. The tight physical market is reflected in "backwardation" in oil futures, i.e., a sign that supply stock is narrowing and near-term supply/demand conditions are tightening – hence upward pressures on future oil prices for both major benchmarks, Brent and West Texas Intermediate (WTI).

Upside trajectories & downside risks

OPEC+ group 'supply management policies' – after cutting production by around 10mn bpd in 2020 due to the worst health epidemic in over 100 years, OPEC+ is now adding 400,000 bpd to collective output quota/month until September 2022 when each country hits their baseline. There are doubts if producers can boost production sufficiently in the coming months even at elevated prices. Underproduction by Russia, Nigeria and Angola could become a major upside for oil this year. Africa's oil giants

Global Oil Demand and Supply Balance (mn bpd)

	2019	2020	Est_2021	Proi. 2022
Total petroleum consumption (incl. liquid fuels)	101.23	91.81	96.90	100.52
of which: OECD 35 countries [1]	47.55	41.98	44.38	45.76
Non-OECD regions	53.68	49.84	52.52	54.76
Total production [2]	100.61	93.84	95.53	101.05
of which: Non-OPEC supply	65.98	63.14	63.93	66.77
Global balance (closing year-end)	0.62#	2.03*	1.37#	0.53*
OECD commercial inventories	2,879	3,025	2,694	2,809

1. Organisation for Economic Cooperation & Development, representing industrial nations.

2. Crude oil, lease condensate, shale oil, oil sands, natural gas liquids & biofuels. Inventory build; # Inventory draw.

Top-10 crude oil producers, 2021 (mn bpd): USA (11.16); Russia (10.78); Saudi Arabia (9.11); Canada (5.58); China 15.0; Iraq (4.06); Brazil (3.69); UAE (2.72); Kuwait(2.42); and Iran (2.39), representing 60% of world's production.

Source: EIA, Short-term Energy Outlook, January 2022

(Nigeria and Angola) have a combined OPEC quota of 2.83mn bpd according to Refinitiv data, but Nigeria has failed to meet its quota since July 2021, while Angola (September

“ Global inventories fell substantially in 2021 (below the five-year average), indicating an under-supplied market and higher drawdowns.”

2020) largely due to technical and financial challenges in deepwater oil exploration.

Some of the top producers (including Russia) are nearing the limit of their spare capacity (an indicator of output flexibility). Only Saudi Arabia, Iraq, the UAE and Kuwait currently possess spare capacity, i.e., where additional output commences within 30 days and is sustained for at least 90 days as defined by the U.S. Department of Energy. OPEC's spare capacity could potentially reach only 4mn bpd by the Q4 22, down from 9mn bpd in January 2021, according to the International Energy Agency (IEA).

Meanwhile, global inventories fell substantially in 2021 (below

the five-year average), indicating an under-supplied market and higher drawdowns. Record gas and coal prices since the Q4 21 in Europe and Asia have led the power sector and energy-intensive industries to switch from natural gas to crude – hence creating additional oil demand when the market is fundamentally tight.

Heightened geopolitical tensions can spill over into lower global oil supplies. Russia (second-largest crude producer) could potentially face U.S. led sanctions on exports in events of military actions in Ukraine. Likewise, worsening unrest in Kazakhstan (which produces 1.8mn bpd), ongoing instability plus investment slump in



Image Credit: Adobe Stock

Oil remains a fundamental driver of energy security globally.

Venezuela (where 2021 output plunged to 560,000 bpd) or worst-case scenario political disintegration of Libya would stop over 1mn bpd from Africa's largest holder of proved oil reserves.

However, uncertainties overhang the crude market – by extension future price trends.

These include a return to widespread mobility restrictions if the occurrence of new Covid variants disrupts business activity and travel in more developed economies, at a time when fiscal- and monetary stimulus policies are already or nearly exhausted. A weakening of economic growth due to global supply chain

disruptions – hence slowing energy demand.

The return of Iranian exports if Tehran and Washington strike a new nuclear deal, thereby Iran re-joining the Joint Comprehensive Plan of Action (JCPOA), albeit a difficult negotiation process. Iran's 2021 output (2.4mn bpd) was down on 2017 figure (3.79mn bpd). Higher Iranian supply alongside rising U.S. shale oil production would swing the balances into a sizeable surplus – thus prompting weaker prices in 2H 2022.

Higher for longer

Six years ago, former BP chief executive Bob Dudley said “the industry needs to prepare for lower for longer.” By contrast, today's oil scenario is “higher for longer.” Sustained chronic underinvestment and political pressure on energy majors to curb emissions and even keep recoverable reserves in the ground could result in petroleum supply peaking earlier than demand, thus structurally higher prices by the mid-to-late 2020s. Spending on fossil fuels has fallen precipitously from 2014, reaching a bottom only in 2020. Estimates vary from between US\$600bn to US\$1 trillion of capital been lost to hydrocarbons extraction since 2014.

Global annual upstream spending needs to rise to at least US\$525bn through 2030 to ensure the security of supply (Saudi Arabia-based International Energy Forum and IHS Markit). E&P companies should increase their spending considerably over the medium term to fully replace reserves and avoid declines in future production, noted Moody's.

Even the IEA, champion of green energy, acknowledged in World Energy Outlook 2021, “The world is not investing enough to meet its future energy

“The next two years are critical for the sanctioning of new projects to enable ample new supply online within five to six years.”

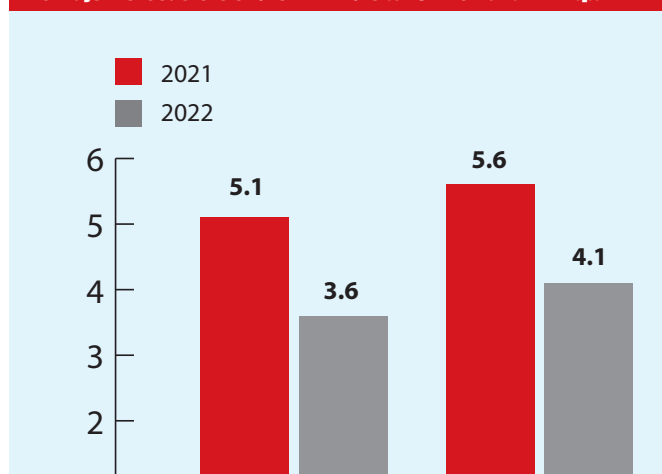
needs, and uncertainties over policies and demand trajectories create a strong risk of a volatile period ahead for energy markets.” Far more E&P investments are needed considering the ‘long-lead’ times in conventional projects from discovery to production.

The next two years are critical for the sanctioning of new projects to enable ample new supply online within five to six years. Oil remains a fundamental driver of energy security globally, regardless of the pace of the energy transition. Without much-needed E&P investments, demand will continue to exceed supply – posing a threat to energy security.

From a technical point of view, crude oil's high range could be (US\$75-85) and low range (US\$55-65). The market vulnerable to headwinds is incredibly hard to predict. That said, beyond 2022, robust demand and tighter supply (reflecting depleting global capacity to boost production) could make oil an expensive commodity. Mohammad Barkindo, OPEC Secretary-General warned insufficient investment in new oil-gas supply would lead to energy shortages, as well as market imbalances and higher prices. ♦

Moin Siddiqi, economist

The Major Forecasters of Growth in Global Oil Demand (mn bpd)



Sources: Latest Oil Market reports

Note: Protections from three major energy organisations remain optimistic about the pace of oil demand in 2022 with the total returning to “slightly above pre-Covid levels – led mostly by non-OECD regions.

Top five oil consuming economies, 2021 (mn bpd): USA (19.75); China (15.26); India (4.66); Russia (3.59) and Japan (3.33), according to EIA.

ANGOLA GEARING UP OIL EXPLORATION



Image Credit: Adobe Stock

Angola's oil industry accounts for one-third of gross domestic product (GDP).

Production in Africa's second-biggest crude producer plummeted to 1.12 mmbbl per day in 2021 (lowest in a decade), which represented a decline of 37% or 660,000 bpd since 2015. Output peaked at nearly two mmbbl per day in 2008, when Angola was viewed as hotbed of drilling and exploration activity in sub-Saharan Africa. The country is banking heavily on output revival by supermajors (BP, Eni, Total Energies and ExxonMobil) – all of which have some oil projects planned.

THE COUNTRY'S **DOWNWARD** trajectory reflects structural deficiencies (similar to Nigeria) – rapid reservoir depletion and a prolonged lack of enhanced oil recovery investments to improve oil-recovery rates or tap additional reservoirs. New exploration and development (E&D) investments have declined considerably in past few years – hence operators' failure to reverse production decline at mature oilfields: Pazflor, Cabinda, Girassol, Hungo, Kissanje, Plutonio and Dalia – while prohibitive costs, too, deterred upstream capital expenditure (capex). Angola is largely dependent on deepwater fields where production typically declines faster than in onshore oilfields. However, Angolan government is eager to revive exploration in what was once one of globe's most prolific offshore prospects.

The similarities of the geological formations, including

'pre-salt' tectono-sedimentary sequences along with reservoir qualities which comprise Angola's primary offshore oil basins with offshore Brazil indicates that Angolan potential is equally vast. Proven oil reserves are in offshore Lower Congo, Kwanza basins off northern coast and Namibe basin (southern region). Until now, latter basin was largely unexplored, although US-oilfield services company Schlumberger describes it as "one of the world's largest remaining prospective frontier areas for oil and gas exploration". Angola hopes that ExxonMobil's expertise could unveil potential hydrocarbons discoveries in Namibe frontier, which bears similarities with Brazil's oil-abundant Santo's basin.

New projects are estimated to add 80,000-90,000 bpd in 2022 (Rystad Energy). The bulk of Angolan oil comes from offshore fields near the Cabinda enclave.

Angola produces mostly light-and-medium grade sweet crudes: Nemba, Dalia, Mostarda, Gindungo, Girassol, Cabinda and Kissanje. Its key internationally graded blend is Cabinda with an API (American Petroleum Institute) gravity of 32 degrees – suited for refining into high-quality extremely low sulphur content fuels sought by refiners in Asia and Europe.

Reinvigoration of hydrocarbons sector

Angola's oil industry, which accounts for one-third of gross domestic product (GDP), plus more than 90% of exports by

value, has undergone significant restructuring since 2017 – leading to more business-friendly and streamline business structure. Sonangol (national oil company) concentrates exclusively on exploration and production (E&P) activities. Angola is now offering better fiscal terms (including tax breaks) and more exploration blocks in offshore and onshore basins – aimed at increasing proven oil reserves (8.16bn barrels OPEC data) and reversing downward spiral in market share. The time-lag from exploration to first oil on new areas is between five to 10 years – hence the need for fiscal incentives to entice (E&P) investments in offshore frontiers, the linchpin of future crude production growth.

A new hydrocarbons exploration strategy (2000-25) was passed that seeks to intensify E&P activities in order to unlock oil potential, including unconventional reservoirs to replace depleting reserves – thus

Angola's Crude Oil Production (000'000 bpd)

2015	2016	2017	2018	2019	2020	2021
1780	1722	1632	1479	1373	1271	1110

Source: BP and U.S. Energy Information Administration.



Image Credit: Adobe Stock

Enhanced oil recovery (EOR) methods are best option to boost production from current matured oilfields.

mitigating the decline and stabilise oil production as well as to foster competition in the energy industry. Sonangol claims there could be 57bn barrels of recoverable oil and 27 tcf of natural gas – both in offshore and onshore acreages.

Central to the government's plan is attracting US\$679mn per year in foreign investment and providing US\$188mn from national budget. The national hydrocarbon regulator, the Agencia Nacional de Petróleo, Gás e Biocombustíveis (ANPG), warned output could plunge to 500,000-bpd and virtually zero, respectively, by 2028 and 2040, without bringing new discoveries into production and much-needed upstream investments.

In 2020, three blocks in Lower Congo basin and six blocks in the Kwanza basin were allocated for public tender – followed last year

by eight blocks in offshore shelf and deepwater Lower Congo basin via Public Tender and/or Limited Public Tender. Onshore acreage will be made available for concession through Public Tender in 2023, including four blocks in Congo basin and eight blocks in Kwanza basin. Another Limited Public Tender is due in 2025, with 10 pre-salt blocks offered in deepwater Kwanza Basin, which is believed to hold substantial natural gas. Energy regulator ANPC expects to award 25 fresh concessions by 2025.

Angola's upcoming licensing rounds include a focus on the development of marginal fields – i.e., oilfields that don't produce enough net income to qualify as a commercial field experiencing a change in technical or market conditions. The development of marginal resources is a key element of ANPG's efforts to boost production of existing resources, improving secondary recovery systems and developing additional resources in mature fields. By 2025, exploration activities could account for half of Angola's production.

EOR applications

Future of Angolan production also depends on sophisticated

technologies to recover maximum oil reserves from existing fields (both onshore and offshore). Production to date is characterised by primary and secondary recovery where most of its production rates have reached a plateau and some have declined. Ageing oil wells with heavy and viscous oil flow require thermal technique on a larger scale.

To reverse this trend, enhanced oil recovery (EOR) methods are best option to boost production from current matured oilfields, instead of moving into remote ultra-deep waters green fields where exploration, drilling and completion is expensive and entails uncertainties. Global oil recovery from secondary source is about one-third of original oil-in-place (OOIP), i.e., estimated amount of oil in a reservoir. Thus, between 60-70% of oil deposits are left unextracted. Using EOR, Angola can recover over half of the OOIP, according to industry experts.

In sum, Angola offers viable opportunities for 'Big Oil', which can boost future capacity and contribute to economic development. Key challenges are attracting investment and advanced technologies to tap Angola's vast oil-gas resources, including pre-salt acreage. Ultra-deep-water frontiers carry higher E&P costs, hence need for elevated prices. ♦

Moin Siddiqi, economist

The term 'enhanced oil recovery' (EOR) refers to the technology used to extract crude oil that cannot be extracted through conventional technologies from oil reservoirs. It is also termed as tertiary recovery process as it takes place after primary and secondary oil recoveries. Oil extracted via primary recovery accounts for 5-15% of aggregate reservoir while secondary recovery can extract about 20-60% of total oil present in the reservoir. By installing EOR technology, 35-75% oil can be extracted from the oil reservoir.

Three major categories of EOR applications

- ♦ Thermal recovery, which involves the introduction of heat such as injecting steam to lower the viscosity, or thin, the heavy viscous oil, thus improve its ability to flow through the reservoir.
- ♦ Gas injection, which uses natural gas, nitrogen, or carbon dioxide (CO₂) that expand in a reservoir to push additional oil to a production wellbore, or other gases that dissolve in the oil to lower its viscosity thus improves its flow rate.
- ♦ Chemical injection, which involves the use of long-chained molecules called polymers to increase the effectiveness of waterfloods, or using detergent-like surfactants to help lower surface tension that often prevents oil droplets from moving through a reservoir.

“ Angola's upcoming licensing rounds include a focus on the development of marginal fields.

A long-awaited government nod to sell Aje

AFTER RECEIVING ALL government approvals, Panoro Energy can now proceed for the sale of the shares of its fully-owned subsidiaries that hold 100% of the shares in Pan Petroleum Aje Limited to PetroNor E&P Limited.

Pan Aje participates in the exploration for and production of hydrocarbons in Nigeria and holds a 6.50% participating interest, with 16.25% cost bearing interest, representing an economic interest of 12.1913% in Oil Mining Lease 113 (OML 113), which includes the Aje field.

Receipt of government approvals satisfies the last key condition precedent for the completion of the transaction.



The transaction is expected to close within the next 90 days.


Panoro and PetroNor will now proceed with the final steps to achieve completion of the transaction, including the issuance of new PetroNor shares for distribution to Panoro shareholders. It is expected that

the transaction will close within the next 90 days, and further information will become available in the coming weeks.

John Hamilton, CEO of Panoro Energy, commented, "The divestment is consistent

with Panoro's strategy to rationalise and high grade its upstream portfolio, placing emphasis on the allocation of capital to short-cycle oil production projects and focused exploration close to infrastructure hubs.

"The transfer of ownership of OML 113 to PetroNor will allow Panoro to reduce and optimise its capital expenditures while preserving the ability for our shareholders to benefit from future gas successes through the distribution of shares in PetroNor to its shareholders. Panoro is confident that PetroNor is strategically well positioned to unlock the gas potential at Aje for the benefit of all stakeholders."



CANDLE FILTER


FEATURES

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HOW TO STAY AFLOAT AND MEET NET-ZERO TARGETS

Why shipping is sink or swim for scope 3 in oil and gas? Rightship's head of sustainability and environment Kris Fumberger highlights more.



Kris Fumberger is the head of sustainability and environment at Rightship.

RECENT REPORTS FROM the IPCC and the International Energy Agency have dramatically raised the stakes for decarbonising the oil and gas industry, imposing tough targets for the transition to net zero by 2050. Investors have also piled on the pressure, with more than 20 global investors recently outlining how companies must reduce and report emissions to qualify for inclusion in future net-zero portfolios.

Yet recent analysis reveals that the sector is on course to miss the 1.5C mark by a significant margin, with the World Benchmarking Alliance predicting the top 100 oil and gas companies will overshoot the target by 2037.

This is worsened by the fact there is currently no sector-wide standard or best-practice methodology for achieving net zero across the oil and gas industry. The Science-based Targets Initiative is still working on a universal methodology for net-zero that is yet to come into force while the independent Global Reporting Initiative (GRI) is set to release a new sector standard for net-zero emissions by 2023. Without a universal guide to decarbonisation within scientifically-advised limits, oil and gas companies are effectively left to chart their own course to net-zero.

The hidden emissions in the industry's wake

In the absence of universal standards, the oil and gas industry has instead adopted a widely varying array of individual approaches which

do not necessarily cover the true scope and scale of emissions.

One of the biggest challenges for oil and gas companies is accounting for Scope 3 supply chain emissions, including up and downstream shipping. This is despite the fact Scope 3 emissions account for 88% of all oil and gas greenhouse gas emissions and that failure to curb supply chain CO₂ could cause fossil fuel firms to miss net-zero targets.

Shipping emissions could soar 50% by 2050 which risks significantly increasing the carbon footprint of the oil and gas industry. Tankers largely powered by 'dirty' marine diesel and heavy fuel oil remain the primary mode of transport for intercontinental oil movement.

Bringing transparency to shipping

It is a daunting task to calculate shipping-related emissions, made exponentially more so due to diversification and globalisation of supply chains. The industry is falling behind on measuring as well as managing emissions. Ships have recently improved at digital data capture and communication but many are still failing to derive insights from that data, which could dramatically increase carbon accountability and energy-efficiency across supply chains. Shipping lags behind many other industries such as automotive and aviation in adoption of technologies such as AI and data analytics. For example, there is no universal big data analytics framework for ship performance monitoring to improve their operational energy efficiency.

Pioneering oil and gas leaders are now

using independent vessel selection criteria to analyse total supply chain shipping emissions and even predict future emissions across everything from specific supply routes to ship and cargo types. This information can help rank individual suppliers on carbon emissions, and to reveal and remove carbon-intensive logistics companies from the shipping supply chain. Independent carbon accounting can facilitate more intelligent optimisation of cargo loads, ship speeds and trade routes to cut CO₂ emissions. Research has shown that distance is the main driver of shipping emissions and we have helped major logistics firms use voyage optimisation to dramatically reduce CO₂ output.

The voyage to net-zero

The oil and gas industry is steeped in history, but this has meant it remains mired in old operating models and systemic behaviours that are hard to shift. Yet, confronting and changing shipping-related emissions will be pivotal to ensuring the oil and gas industry meets its net-zero targets within scientifically-advised timelines.

The key is to use independent vessel selection process to bring greater transparency to shipping related emissions and inform data-driven solutions from changing routes and suppliers to transforming technology. This is the key to bring greater central visibility over emissions across fragmented, far-flung supply chains and accelerate the drive to net zero across the value chain. 🔴



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TURNING AROUND AFRICA'S OIL PRODUCTION DEMAND

Despite being blessed with abundant oil and gas resources, Africa's production has been on the decline, representing a challenge for the continent amid Covid-19 economic recovery. How can Africa's producing nations revitalise production? Kola Karim, Shoreline Energy CEO and African Energy Chamber advisory board member, provides more clarity on the current situation.

What will this production underperformance in Nigeria and other African countries mean for the continent as a whole?

Underperformance will have a direct effect on the ability of countries to fund budgetary spending. There has been a direct link for many years between the oil price and the ability of many African governments to balance the books. The massive slow down seen due to Covid-19 and the significant economic shocks it has produced coupled with production below capacity will certainly create fiscal pressure.

We have seen the oil price rise in the last few quarters to a healthy level, however without the production to take advantage of higher prices, expect to see the usual challenges in funding capital spending. Deficit spending will therefore depend on the view of the markets on how much damage and for how long countries to struggle.

What do you feel are the primary reasons influencing production decline in Africa?

I don't think we can take a cookie cutter approach to identifying where the problems lie. For instance, our production challenges

“We would typically expect a natural 4-5% decline in production in the industry. However, Covid has seen those rates double to 10% over the last couple of years.”



Kola Karim is the CEO of Shoreline Energy.

on onshore Nigeria are very different to challenges in other countries that may be more constrained by limited investment in infrastructure or more straightforward operational bottlenecks. Beyond these more systemic challenges I think also that Covid has had a significant impact which has to be worked out of the supply chain and we will continue to see the effects of this through 2022.

We would typically expect a natural 4-5% decline in production in the industry. However, Covid has seen those rates double to 10% over the last couple of years. The massive disruptions in global supply chains has meant that equipment and maintenance activities such as part replacement has been severely

“The systemic and covid related challenges I alluded to earlier are significantly complicated by the additional variable of de-carbonisation which continues to create a potential financing gap for both local producers and IOC's looking to invest in new production.”

disrupted across the industry leading to significant production delays and production shut ins in the worst cases.

What can be done to turn this around?

We are facing some quite significant headwinds. The systemic and Covid-related challenges I alluded to earlier are significantly complicated by the additional variable of decarbonisation which continues to create a potential financing gap for both local producers and IOCs looking to invest in new production. Banks are retreating from lending to oil and gas projects, and this creates an uphill task with regard to the key cornerstone of any turnaround which is financing.

We need to see additional financing to fix supply chains and allow manufacturing and maintenance inputs to be located nearer to production facilities on the continent and we need more investment in opening up additional reserves to close the production gap as consumption returns. ♦

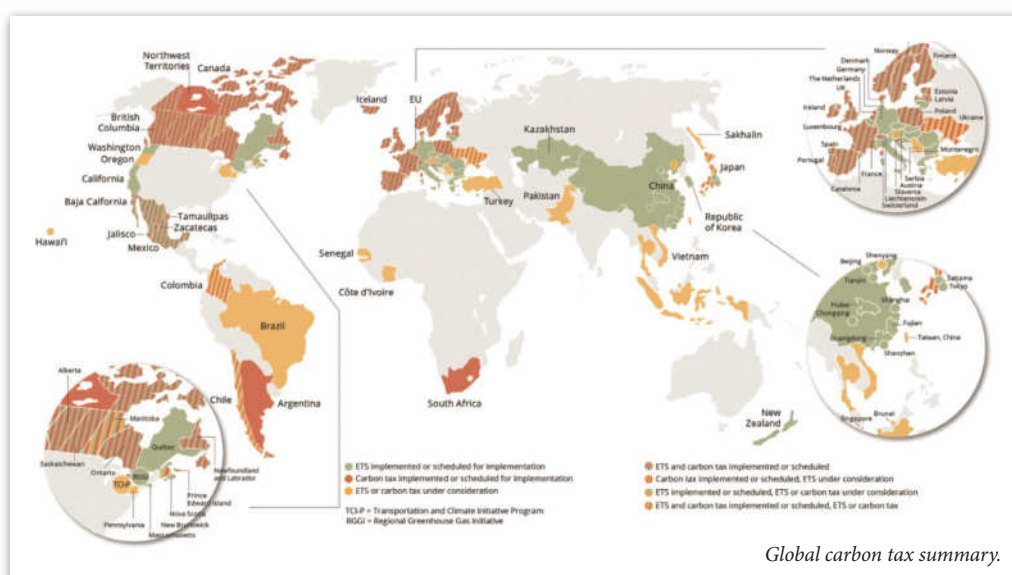
COMMODITY TRADING: SET FOR A DRAMATIC IMPACT?

The world of commodities and commodity trading is moving very swiftly in many ways, but one area that will have dramatic impacts is ESG and carbon.

THE HIGHER AND volatile carbon prices probably reflect increased fossil fuel generation by utilities as natural gas prices soar and renewables output is insufficient and unpredictable. As the cost of allowances to offset emissions rises, it will feed into the cost of electric power.

The purpose of a carbon cap and trade market is to effectively establish a price for carbon as well as reduce emissions by reducing the number of available allowances over time. The EU ETS is perhaps the best known such market along with its UK post-Brexit equivalent. From 2021, to increase the pace of emissions cuts, the overall number of emission allowances in the EU ETS will decline at an annual rate of 2.2% from 2021 onwards, compared to 1.74% currently. Other features of the EU ETS exist to aid in an overall reduction of emissions for phase four of the scheme (to 2030).

“Market risk and exposures will include carbon meaning emissions will need to be offset and the cost of allowances hedged.”



Global carbon tax summary.

The problem is that such cap-and-trade markets are regional, allowances and instruments of various types exist in all these markets and there is no single price for carbon. There may be more than 60 such regional markets with a variety of rules, instruments and schema. Furthermore, as the noose around the neck of CO₂ emissions tightens, other aspects of CO₂ will be applied into these schemes. For example, the EU's 'Fit for 55' policy package includes a proposal to expand the ETS to cover CO₂ emissions from the shipping industry for the first time.

The current proposal would mean that all ships over 5,000 gross tonnes calling at EU ports would need to pay for their CO₂

emissions regardless of flag. The measures would be eased in from 2023 and be fully in place by 2026. At current carbon prices, it is estimated that this will make marine fuel oil between 20-30% more expensive.

Furthermore, a plethora of other requirements may emerge ranging from audits to carbon footprint tracking and reporting that will add complexity, costs, and risks across the board. With COP-26 recently taking place, there may be other considerations, changes, and emerging rules to consider as well but we already know, for example, that counterparty ESG policy will impact credit risk and a company's own policies will impact its credit as well as access to trade finance and other capital.

Market risk and exposures will include carbon, meaning emissions will need to be offset and the cost of allowances hedged. These transactions will all need to be tracked and reported in many ways, not least of which may be carbon footprint reporting on invoices for a specific transaction. Sourcing, movement, processing and so on will also require more work and due diligence from an ESG perspective. Much of this will need to be included in PnL reporting to ensure that the costs and exposures impacts on profitability are well known. Things are going to get even more complicated. ♦

To read the full article, visit www.amphora.net/news-articles

SCALING UP OIL AND GAS TRADE IN SENEGAL

Kurven Monien – Country Manager, OMA Logistics Senegal, speaks with Deblina Roy about the country's energy sector expansion.

How has Senegal's oil and gas logistics market developed over the years?

Senegal has no doubt managed its position as one of the leading African trade hubs. The country's main Dakar port serves as a gateway to Africa for global traders. Recently, with the discovery of approximately 450 bcm of natural gas, Senegal's oil and gas sector has gained the attention of major international companies. In this situation, the logistics sector serves a key role in developing the country's energy sector expansion, scaling up facilities and services to meet the needs of the industry.

Being an expert in the oil and gas logistics field in Senegal, what do you think are the trends in the logistics supply chain in the country?

Senegal has recently seen some positive developments in its oil and gas sector. The prominent developments are seen in the

Grand Tortue Ahmeyim gas field, which is expected to generate its first gas in 2023 and Woodside's work on the Sangomar field, which is set to produce the first oil in 2023.

With these developments, Senegal's oil and gas logistics sector is poised for strong growth over the coming years. The government of Senegal and various private sector partners are pursuing new state-of-the-art port projects, including a new bulk and mineral port in Bargny and a new container terminal in Ndiane, located south of Dakar.

“Our vision is to offer a complete and compliant logistics platform dedicated to the industry.”



Image Credit: OMA Logistics

Kurven Monien is the country manager at OMA Logistics Senegal.



Image Credit: OMA Logistics

OMA Senegal provides ship agency services for vessels calling at Dakar port.

How does OMA Group stand out in shipping and logistics services? What are your ongoing and upcoming projects?

OMA Logistics Senegal regularly arranges the safe handling of shipments throughout Senegal and across borders into Mali and can service any type of project, whether the cargo is heavy lift, out of gauge or break bulk.

OMA Senegal provides ship agency services for vessels calling at Dakar port. It provides services for tankers, bulk carriers, RoRo, cruise and navy vessels and co-ordinates with the cargo charterers and receivers as required.

In Ghana, OMA operates a successful logistics platform for the oil and gas industry, and we plan to roll this out in Senegal in the near future. Our vision is to offer a complete and compliant logistics platform dedicated to the industry; including warehousing, yard storage, container depot and offices. ♦

SpaceX's Falcon 9 to monitor shipping off South African coastline

AS PART OF American aerospace company SpaceX's Transporter-3 mission, the first Maritime Domain Awareness Satellite constellation (MDASat-1) was launched from Cape Canaveral, Florida – an initiative that is seen to transform South Africa's maritime industry.

The satellites were launched aboard US aerospace company SpaceX's Falcon 9 and will be deployed in low Earth orbit at an altitude of 525 kilometres. Transporter-3, SpaceX's third dedicated rideshare mission, will be carrying a total of 105 spacecraft, including CubeSats, microsats, PocketQubes and orbital transfer vehicles.

The constellation's name, MDASat, is derived from the government's Maritime Domain Awareness project. The three satellites will facilitate South Africa in monitoring its exclusive economic zone using AIS data. The Cape Peninsula University of Technology (CPUT) in Cape Town made the three satellites.

The launch of the first three satellites of the MDASat constellation follows three years after the launch of the most advanced South African nanosatellite to date, ZACube 2, as a technology demonstrator for the MDASat constellation.

South African coastline is set to get transformed. "Since its launch in 2018, ZACube-2 has been providing cutting-edge very high frequency (VHF) data exchange communication systems to the country's maritime industry, as a contribution to Operation Phakisa," said Dr Blade



Image Credit: Adobe Stock

The launch of the first three satellites of the MDASat constellation follows three years after the launch of the most advanced South African nanosatellite to date.

Nzimande, minister of higher education, science and technology of South Africa.

The full MDASat constellation will be an operational constellation of nine cube satellites that will detect, identify and monitor vessels in near real-time in support of South African maritime domain awareness.

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DRIVING DEEP AT THE HEART OF AFRICA

Africa has without doubt managed to position itself as one of the world's most competitive hydrocarbon markets, with countries such as Nigeria, Uganda, Kenya and Tanzania leading oil and gas pipeline projects.

ACCORDING TO A recent Rystad Energy analysis, when it comes to offshore field sanctioning, there are around 80 projects worth a total of US\$85bn in the global approvals pipeline for 2022. Of these, 10 are floating production storage and offloading units (FPSO), 45 involve subsea tiebacks and 35 are grounded platforms. Latin America and Europe are expected to hold around 24% each of the total offshore sanctioning values, with deepwater expansions expected in Guyana, Brazil and Norway following recent tax changes.

As Africa holds a massive base for natural gas, the continent has realised the benefits of infrastructure development to efficiently transport the resources as well as allow the proper utilisation of them across the continent. A number of cross-border pipeline projects are set to come on stream in the next few years, with some being already operational in the region.

The East Africa Oil Pipeline Project, a 1,443km pipeline that will transport crude oil from Uganda to the Indian Ocean Coast in Tanzania, is attracting significant levels of investment, with new and exciting opportunities expected to come online in 2022 and beyond. The pipeline is expected to lead to a rise in foreign direct investment



Image Credit: Adobe Stock

Pipeline development projects are gaining momentum in Africa.

(FDI) for the two countries.

The US\$6mn African Renaissance Pipeline Project (ARP) aims to connect Mozambique's Rovuma basin to Springs in South Africa's Gauteng. With an expected annual capacity of 18 bcm, the ARP is set to enable Mozambique and South Africa to increase access to fuel for industry as well as power generation. The project is scheduled to be completed in 2025 for the Mozambican segment and in 2026 for the South African segment.

In December 2021, Nigeria and Algeria signed a deal to

renew the countries' commitment to implement the restructuring projects launched related to the Algerian-Nigerian gas pipeline and the Trans-Saharan route.

In a recent exciting development, ICR Integrity (ICR), global provider of specialist maintenance, integrity and inspection solutions, has been awarded a long-term hire contract with Aker Solutions for the provision of Quickflange weldless connections for bp's offshore assets in Angola. According to Phil Paterson, business development manager at ICR, Quickflange is qualified

and approved to several international type standards and is proven in improving pipeline integrity, which is imperative to its clients.

Securing adequate funding is one of the main challenges to execute such massive infrastructure development in Africa. However, with ongoing developments in the region and upcoming projects, it will be interesting to see how government initiatives and regional cooperation can play a key role for the practical realisation of the continent's oil and gas pipeline projects. 🔴

DRIVE STRONG INVESTMENT NARRATIVE AT NIEC 2022

HE Gabriel Mbaga Obiang Lima, minister of mines and hydrocarbons, Equatorial Guinea, will attend the fourth edition of the Namibia International Energy Conference, organised by Rich Africa Consultancy, under the patronage of the Ministry of Mines and Energy, from 20-22 April 2022 in Windhoek.

UNDER THE THEME “The Energy Mix: Positioning for Investment, Industrialisation and Growth,” the Namibia International Energy Conference 2022 will unite regional energy leaders and international financiers for two days of dialogue and networking. Recognised as the country’s official thought leadership event, the conference is committed to driving industry growth and development across the country.

With recent sizeable discoveries made by Shell, ongoing drilling campaigns by Reconnaissance Africa, and new explorers demonstrating an interest in Namibia’s high potential oil and gas market, the country is ready to welcome investors into its diverse energy sector. Relying on petroleum imports for a significant portion

“Namibia is an exciting market with amazing potential, as one of Africa’s latest countries to announce discoveries”, said HE Lima.



HE Gabriel Mbaga Obiang Lima, minister of mines and hydrocarbons, Equatorial Guinea.

of its energy supply, the country is focused on establishing domestic supply chains so as to ensure energy security. By accelerating exploration and production, particularly through international oil company (IOC) participation, Namibia is committed to its energy future and will emphasise this at the conference.

HE Gabriel Mbaga Obiang Lima will share insights, discuss strategies, and collaboratively

work on establishing a competitive oil and gas sector in Namibia. Equatorial Guinea represents an ideal partner on this front, as one of Africa’s top oil and gas destinations, and will be a valuable asset for Namibia as it moves to drive development across the oil and gas sector.

Leading a strong delegation of Equatorial Guinean industry leaders and national oil companies to Namibia – all eager to collaborate with local

Namibian companies to boost the local industry – H.E. Gabriel Mbaga Obiang Lima will drive a strong oil and gas narrative at the conference. In addition to promoting local company collaboration, the minister will emphasise the role of IOCs in driving energy sector growth.

Meanwhile, as Namibia pursues the monetisation of its oil and gas resources, Equatorial Guinea, as an expert in this area, will be able to share knowledge, expertise and solutions for the development of oil and gas projects such as the Kudu Gas Field, which is estimated to contain 1.3 tcf of gas, and the recent oil discovery by Shell in the offshore Graff-1 Well. Equatorial Guinea has been highly effective, particularly regarding gas monetisation and will be able to offer insight into strategies. Accordingly, Equatorial Guinea has emerged as the ideal partner for Namibia, and the minister will lead a delegation to Namibia to demonstrate this.

“Namibia is an exciting market with amazing potential, as one of Africa’s latest countries to announce discoveries, it is incumbent upon us to bond together and share our mistakes, success and experiences. When we learn from each other we can do better,” stated HE Gabriel Mbaga Obiang Lima. ♦

ENHANCING CYBERSECURITY FOR OPREX CONTROL

Yokogawa Electric Corporation has obtained ISASecure CSA Level 1 certification from the ISA Security Compliance Institute (ISCI) for its CENTUM VP integrated production control system, a product in the OpreX Control and Safety System family.

WITH THIS CERTIFICATION, Yokogawa's CENTUM VP integrated production control system and ProSafe-RS safety instrumented system now both conform to the latest international security standards. In addition, the company has developed an enhanced version of ProSafe-RS Lite that meets both explosion protection and marine standards, and an updated version of the Plant Resource Manager (PRM) software that supports this latest version of the ProSafe-RS Lite.

Due in part to factors such as the increased reliance on remote system access during the COVID-19 pandemic, cyberattacks on production facilities are on the rise worldwide and are growing ever more sophisticated. This is driving a rising awareness of the need for compliance with international standards. Components that receive ISASecure CSA certification conform to the IEC 62443-4-1 and IEC 62443-4-2 international standards pertaining to security for industrial automation and control systems.

“Upgrading to the latest CENTUM VP R6.09 also enables operators to access Collaborative Information Server screens from their human interface stations.”

There is an increased reliance on remote system access during the COVID-19 pandemic for production facilities.



Image Credit: Adobe Stock

For CENTUM VP to qualify for ISASecure CSA Level 1 certification, a cyclic redundancy check function has been added that periodically diagnoses the integrity of the programmes and databases on a plant's field control stations. If an error is detected, a system alarm is issued. Upgrading to the latest CENTUM VP R6.09

also enables operators to access Collaborative Information Server screens from their human interface stations, thus enabling the acquisition in real time of data on the operational status of equipment and devices.

In line with efforts to enhance safety, ProSafe-RS R4.07 has been developed, as a result of which ProSafe-RS Lite now meets both explosion-protection standards (ATEX/IECEX/ECAS-Ex) and marine standards. This means that this SIL2 system can be installed in plants and facilities where there is a risk of explosions, and on LNG carriers

and other vessels. By using it together with the SIL3-certified ProSafe-RS, which also meets both sets of standards, it is possible to optimise the cost of plant safety instrumentation based on the application.

With the development of highly secure and safe devices and systems, and the provision of support for their operation, Yokogawa is able to offer a wide range of control system solutions. The certification and functional enhancement of these solutions will contribute to safe and robust plant operations in many industries. ♦

CYBER-DEFENCING TO COMBAT THE TOP THREATS

Most oil and gas businesses face security challenges when deploying IoT solutions. Fear of external cyber attacks and poor network security are their two biggest concerns – reveals a researched by Inmarsat.

INMARSAT'S RESEARCH ENTITLED 'Industrial IoT in the Time of Covid-19' has revealed that 92% of oil and gas respondents said their organisation's IoT projects could be more secure. Also, around 58% of all oil and gas businesses consider poor network security the biggest security challenge associated with the use of IoT projects within their organisations.

Businesses are also acutely aware that stolen, misused or misplaced data from IoT projects could give competitors access to confidential business information. For this reason, the other top IoT security threats reported include potential mishandling or misuse of data by employees, and risk of external cyber attack (each 52%) and insecure storage of data collected (48%).

Since Inmarsat's last IoT survey in 2018, IoT adoption has dramatically accelerated, with the resulting proliferation of networks intrinsically creating more vulnerable endpoints across IoT networks, with the number of perceived security threats associated with industrial IoT networks increasing accordingly.

However, considerable progress has been made in the oil and gas sector over the last few years to combat these threats, with an increasing number of companies responding by creating an internal IoT security

policy. Around 51% of all oil and gas organisations now have one in place, compared with only 42% for the energy sector as a whole in 2018. Many more oil and gas businesses are now hiring skilled staff (49%, compared to 33% in 2018) or upgrading existing security technologies (46%, compared to 37% in 2018).

Those oil and gas organisations which have a formal IoT strategy in place, are more likely to take measures to ensure their cyber security, with 56% training employees on IoT (compared with only 36% of those without a formal IoT strategy in place). IoT security is also a higher priority in those organisations where IoT purchasing decisions are made at board level by the C-suite, or by the senior leadership team. Here, a higher-than-average proportion of respondents are focusing on upgrading existing security

technologies (67%, compared with the sample average of 46%).

Damian Lewis, market development at Inmarsat, said, "Digital security is a major concern for oil and gas organisations, as the sector occupies a strategic position powering the world's economic engine and is therefore under increased threat of cyber attacks. In early 2021, the Colonial Pipeline ransomware attack took out half of the US East Coast's fuel supply, causing consumer petrol prices to spike and demonstrating how vulnerable oil and gas infrastructure is to bad actors. As a result of such high-profile attacks the sector is highly security-conscious and considered in the need to continue to improve its cyber-defences."

Mike Carter, president of Inmarsat Enterprise, added, "Overall, our results reveal it is those organisations with a formal IoT strategy in place, or who enjoy full support for their IoT projects at the boardroom level, lead the way in terms of having the most informed, security-conscious mindsets and taking positive, proactive steps to shore up their cyber-security defences. These organisations tend to best understand the gravity of IoT cyber security issues, taking essential measures such as introducing internal and external IoT security policies and

investing in, or upgrading security technologies.

"Overall, our results reveal it is those organisations with a formal IoT strategy in place, or who enjoy full support for their IoT projects at the boardroom level, lead the way in terms of having the most informed, security-conscious mindsets and taking positive, proactive steps to shore up their cyber security defences. These organisations tend to best understand the gravity of IoT cyber security issues, taking essential measures such as introducing internal and external IoT security policies and investing in, or upgrading security technologies.

"Cyber security risk management is vital at the network level. Inmarsat's global ELERA network, the latest evolution of our industry-leading L-band network, is specifically designed to deliver the most secure and highly reliable IoT connectivity to business-critical applications, even in remote places. By enabling organisations from all sectors to access IoT securely anywhere, we enable new possibilities."

The Inmarsat Research Programme report 'Industrial IoT in the Time of Covid-19' focuses on measuring the IoT maturity of global industry during the Covid-19 pandemic and the rise of digitalised production and supply chains. 🔥

“ Cyber security risk management is vital at the network level and an increasing number of companies are creating an internal IoT security policy.”

MITIGATING THE RISK OF CORROSION

Pipelines that transport oil, gas, chemicals and petroleum products have critical significance for the economy. Therefore, keeping a check on their health is critical to prevent these assets from electrochemical deterioration or corrosion.

AS THE INDUSTRY drills deeper and utilises enhanced recovery methods such as thermal and CO₂ injection, operators are exposing the products in the pipelines to greater concentrations of harsh chemicals, higher temperatures and higher pressures.

In addition, it is estimated that 40% of the world's remaining gas reserves are sour, and CO₂ and/or H₂S content within these wells averages 10% or more. Therefore, maintaining pipeline integrity and keeping emissions in check has never been more important.

Yet, traditional pipeline materials, including gaskets and seals, are not always up to the challenge.

GPT Industries' EVOLUTION is combating these challenges. EVOLUTION is a fully-encapsulated isolation gasket that delivers the impermeable performance needed to prepare any flange for the increasing risks found in today's oil and gas industry.

What's more impressive is that the EVOLUTION isolation gasket has undergone 24 separate tests conducted by independent testing houses and through GPT's internal testing facility. The solution is being used in more than 100 oil and gas operators around the globe.

Suiting up with Al-Mg-Si

One of the most common methods of improving the corrosion resistance of steel is coating it with other metals such as aluminium (Al). But the use of Al in marine applications is limited owing to its tendency to react with chloride ions in sea water, leading to corrosion. The addition of other elements, such as magnesium (Mg) and silicon (Si), to form an alloyed coating is a promising way around this problem. But Mg cannot be easily deposited as a coating using the conventional method of



Image Credit: Adobe Stock

Scientists have developed new anti-corrosion coatings to increase the economic life and durability of steel machinery in an environment-friendly manner.

dipping the steel into a hot bath of metal salts.

Addressing these issues, researchers from the Korea National Ocean and Maritime University have developed a new aluminium-magnesium-silicon (Al-Mg-Si) alloy that can greatly increase the corrosion resistance of steel.

In this study, the researchers took aluminised steel (with Al and Si) and then plated it with Mg using a technique called "physical vapour deposition." This was then followed by exposing the coating to a high temperature of 375°C. Then they characterised the coating film and performed corrosion testing in the form of a "salt spray test." They found that the corrosion products were also formed in two layers: a surface layer made of primarily Al-based corrosion products, and an inner corrosion layer made of Al-, Mg- and Si-

based products. Moreover, the inner layer of corrosion products produced a "shielding effect," which further improved their anti-corrosion properties.

"Our research reveals how a highly corrosion-resistant steel can be produced using a simple change in the surface treatment protocol. This makes it very meaningful for conserving energy and environmental resources," explained professor Myeong-Hoon Lee of the Korea National Maritime and Ocean University, who guided the study. This study was made available online on 9 September 2021 and was published in Volume 192 of the journal in November 2021.

One thing the scientists agree is that this protocol for enhanced corrosion resistance in steel takes a bold but sure step towards a more sustainable future. ♦

AFRICA'S PRODUCTION CHALLENGES AND ECONOMIC GROWTH

In an interview with African Energy Chamber (AEC), Valentine Ugbeide, executive chairman of Moore Oil Exploration and Production Nig Limited and CEO of Gremore Limited, has shared his insights on Africa's current production challenges and the role low carbon gas will play in driving economic growth.

What will this production underperformance in Nigeria, Libya, Angola, Congo, Equatorial Guinea and African countries mean for the continent as a whole?

Looking at the issue from a broad perspective, low production performance in the major oil producing countries and others in the continent of Africa directly translates to budgets being significantly impaired and this is due to the fact that over 70% of revenues are derived from oil production and most of these nations would not have adequate fiscal hedge to enable them to manage the slump in production.

Take the Nigerian economy for instance, it is heavily dependent on the oil sector, which, accounts for over 95% of export earnings and about 40% of government revenues, according to the International Monetary Fund. And this is similar to some other African countries as well. The decrease in production for oil and gas in Africa also means that the government would have difficulty financing development programmes.

What do you feel are the primary reasons influencing production decline in Africa?

Understanding the causative issues that have resulted in the decline of Africa's oil production really is the first step in addressing the issue of decline on the continent. Nations in Africa all have their unique structures and processes so it is difficult to pinpoint a specific issue that might be ravaging all the nations but a problem that has plagued these countries is the lack of investment in the industry. Poor infrastructure and competent expertise are also factors that have affected the decline in production. And when you take a closer look at Nigeria for example, and you find the

devastating state of the oil pipelines due to recurrent attacks by militants, this also explains some of the reasons for the decline.

What can be done to turn this around?

We can say that once economic and human activities return to pre-pandemic status, energy consumption would increase. This would in turn increase the oil demand which in turn forces players in the industry to increase the oil production level. Albeit governments across Africa in conjunction with key industry players must make conscious efforts to attract and invest in the sector to boost production and take advantage of any future demand increase in the international market.

What would you recommend as an industry approach to low carbon gas monetisation and financing in Africa?

Consistent widespread education on the benefits of low carbon gas really is the substratum of its monetisation. High level executives in the industry need to start and push the conversation in every room that they are in. We see what Total Energies has done and is still doing, being able to attempt saddling the best of both worlds is highly commendable and motivating. We know that low carbon gases help minimise the impacts of climate change on humanity, so it is paramount that every level of the industry understands this and begins to consciously think up innovative strategies to enhance its monetisation.

What should new independents consider while entering a changing African energy sector?

It is common knowledge that the energy

sector generally is an interesting one to participate in, and this is majorly due to its high level of volatility. The African energy sector does pose its unique challenges but offers great opportunities and rewards. You will easily find that a variety of the issues we face as a sector are cyclical in nature, so a good study and research will arm you up in terms of what to expect from the sector.

What pending deals do you believe should be completed and announced at African Energy Week in Cape Town?

I definitely look forward to the Tanzania LNG Liquefaction Plant (TLNGP), a US\$30bn project that has been stalled since 2016. According to Nes Fircroft, the facility when completed, will have the capacity of 10 million tonnes cu/f of gas per annum, while the construction phase will not only boost the economy of Tanzania but also the majority of East Africa. Notwithstanding the governmental complications with the project, the owners Equinor, Shell, ExxonMobil, Ophir Energy and Pavilion Energy, have continued with developmental plans. And there are strong indications by the Tanzania Government that the project construction phase will commence 2022, with the facility fully operational in 2028.

Another deal I would be ecstatic about is the Ogidigen Gas Revolution Industrial Park (GRIP). This project is long planned and located in the Gas Revolution Industrial Park in Ogidigen, Delta State, Nigeria. With an estimated US\$20bn for construction, the project has the capacity to rejuvenate the economy of Southern Nigeria while establishing Nigeria's dominance in the gas sector in Africa. ♦

Valentine Ugbeide, CEO, Gremore Limited

THE RISE OF ROBOTICS

GlobalData reports state that robotics is becoming essential to the oil and gas industry as technological advancements increase the tasks they can undertake. Tulana Nayak reports.

ARTIFICIAL INTELLIGENCE (AI) and machine learning (ML) are gaining acceptance in the oil and gas industry. It is not AI and ML on their own that make a difference, but the capabilities they offer when applied in combination with other technologies, as illustrated by the following applications:

Safety monitoring: High-resolution video drones and robotic devices can use AI to conduct site inspections and suggest actions for oil platforms, pipelines and other risky work sites while keeping humans away from hazards.

Proactive asset maintenance: By applying ML-enabled asset condition monitoring to pumps and compressors, operators can spot equipment failure in advance, eliminating unplanned downtime and ensuring prolonged life of expensive machinery.

Process automation: From upstream applications such as drill modeling and geospatial data analysis to mid- and downstream applications like inventory management and hazardous emissions monitoring, there are endless opportunities for AI- and ML-powered automation in oil and gas.

Robot renting

Robot renting — also known as the robot as a service (RaaS) — is expected to revolutionise the way oil & gas (O&G) companies approach robotics, according to GlobalData. The data and analytics company stated that industry leaders such as BP, Equinor, ExxonMobil, and Shell are increasingly testing autonomous robots in their facilities, with these systems often supported by other technology such as AI. However, the costs can be off-putting. Technology companies such as Fugro that offer RaaS allow O&G players to avoid the cost of inventory and obtain robotic services when required.

Ravindra Puranik, oil and gas analyst at GlobalData, said, “A number of technology vendors are trying to adopt RaaS in addition to selling robotics equipment. This market has considerable potential for growth within O&G as it can save players the considerable costs associated with purchasing robotics systems.”

Filipe Oliveira, thematic analyst at GlobalData, added that RaaS is possible because of developments within cloud computing in the last decade. “Cloud-connected robots are smarter and can be



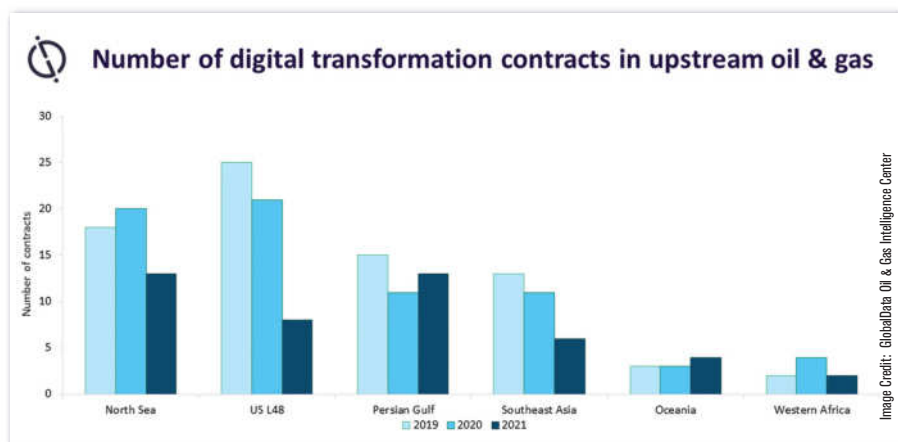
Image Credit: Adobe Stock

A robot for screwing pipes on the drilling rig.

monitored, managed and maintained remotely. Within the O&G industry, tech specialists such as Fugro, currently have an incumbency edge due to their industry know-how.”

GlobalData's latest report, *Robotics in Oil and Gas (2021) – Thematic Research* revealed that with a growing list of functionalities tailored to O&G, robots operate as terrestrial crawlers, aerial drones, autonomous underwater vehicles, and remotely operated vehicles.

Puranik added, “Robotics will have applications throughout all work streams within O&G. For upstream operations, uses include automated drilling or conducting seismic surveys; for midstream, they can be used for inspection and maintenance, as well as for design, construction and remote monitoring; while downstream applications include automated refuelling and material handling. Robotics offers high reliability and efficiency, while also improving overall operational safety.”



Contracts activity relating to digitalisation in the upstream remained resilient in the last two years, despite the pandemic-led industry downturn.

EMPOWERING EXTRAORDINARY EXPERIENCES AT SEA

The maritime industry is on the threshold of rapid technological change. Commercial shipping companies and cruise operators alike are increasingly leveraging digital transformation to drive value and gain a competitive edge in the market. Max Heinen, vice-president of strategy and market intelligence at SES, speaks about the role connectivity plays in the industry's evolution.

Image Credit: SES

Cloud applications are key to enabling the smart ship.

FOR THE MARITIME industry, it's increasingly important to enable connected experiences aboard ships. This is true both for cruise and commercial shipping companies, especially as they recover from the impact of the pandemic. For commercial shipping companies, crew welfare is of growing importance—ensuring connectivity to keep crew connected to their friends and family offshore is a key element of employee retention. Cruise operators, on the other hand, are looking to enhance guest experiences to stay ahead of the competition. This includes ensuring safety on board via passenger tracking and e-medicine solutions—a must-have in the post-pandemic era.

The adoption of the 'smart ship' concept is also a huge trend in the maritime industry. To capitalise on these trends, cruise and commercial shipping companies require reliable, high-performance, cloud-grade connectivity, with the ability to scale as their bandwidth requirements increase in the future.

According to Euroconsult, the average bandwidth consumption per ship will increase

from 40 Mbps in 2020 to 340 Mbps by 2030. Currently, bandwidth demands on certain cruise ships already exceed this number.

Cruise companies are also increasingly focused on creating personalised guest experiences through the use of wearables. Smart ship technology allows ships to have multiple sensors onboard, which can track guest location and store guest information to enable a range of smart services—from automated door unlocking and on-board shopping to real-time wayfinding and customised food and beverage services.

Commercial shipping is a highly cost-sensitive industry. Companies in this segment are always looking to maximise fleet efficiency by implementing solutions to prevent unplanned downtime, optimise energy consumption, and reduce maintenance costs. Another important area is crew retention—shipping companies want to minimise costs associated with training new crew members. According to a study, a large percentage of crew onboard commercial shipping vessels today would change employers to receive

internet access at sea. As a result, there is a growing need to ensure onboard networks can provide reliable connectivity for crew members to stay connected with their family and friends.

Role of the cloud in the maritime industry

Cloud applications are key to enabling the smart ship. Some of the major cruise and commercial shipping companies have already started to invest in the Internet of Things (IoT) and artificial intelligence (AI) solutions, and smaller shipping companies are in the process of discovering the benefits of these technologies. With the adoption of new technology, seamless connectivity to the cloud is expected to become increasingly important for the maritime industry. Whether it's optimising ship operations, enabling safety on board, or enhancing passenger experiences, the cloud is crucial to the industry's transformation in the future. ♦

For enquiries – Marketing.Africa@ses.com

A NEW BATTLE FOR TALENT IN ENERGY

In 2022, the industry is still recovering from the repercussions of COVID-19. How has the pandemic impacted oil and gas – and what is the perspective of employers and energy workers? A report from recruitment firm Brunel and Oilandgasjobsearch.com answers these questions.

The top energy job roles with unfilled positions are drilling and well delivery (14%), followed by geoscience (12%).



Image Credit: Adobe Stock

THE PANDEMIC HAS had a significant impact on energy workers' outlook for the future. A supply chain disruption, coupled with rising gas prices, has had many workers questioning the security of their roles over the last couple of years.

The Energy Outlook report 2021/22 by Brunel and Oilandgasjobsearch.com has collected around 17,000 questionnaires from jobseekers and recruitment professionals from around the globe.

When asked about the biggest challenge the industry is facing, 31% of recruiters said the ageing workforce and skills shortages.

The key cause of skills shortages is considered inadequate succession planning for knowledge transfer and skills retention (39%), followed by the

“ Oil and gas hiring activity passed pre-COVID-19 levels earlier this summer and reached a three-year high in August.”

loss of expertise due to an ageing workforce (36%) and education and training (34%).

When asked about the actions they were taking to overcome the skills shortage, the most common answer companies gave was organising training, and developing their existing workforce (42%). This was followed by changing their strategic priorities (22%), targeting transferable skills from other industries (21%), and partnering with colleges and universities (21%).

These are not the only challenges, though. According to recruiters, the biggest challenge is

the reduced demand for oil and gas due to the increasing interest in renewable and alternative energies (34%). This is followed by climate change fears as the world moves away from oil and gas (32%) and an ageing workforce (31%).

Last year, the biggest challenge cited by recruiters was the unpredictability of the energy industry and its constant cycles of boom and bust. Of course, this challenge remains, and traditional energy companies are having to re-shape their priorities to align with today's environmental narrative. With many countries having signed up

to the Paris Agreement, and with last year's COP26 event focussed on keeping global warming to 1.5 degrees Celsius, an increasing number of Environmental Attitudes companies are having to realign their positioning in order to fulfil the terms of the agreement to become a carbon net zero business.

Upstream roles are proving more challenging to fill

Despite the energy sector bouncing back overall, hiring activities are creating recruitment stresses as applications per vacancies remain low. The survey has revealed that 82% of recruiters say that one in 10 of their open positions have been unfilled for more than three months.

The top energy job roles with unfilled positions are drilling and well delivery (14%), followed by geoscience (12%). Roles that are proving equally difficult to fill are operations, maintenance and production (11%); construction, subsea and pipelines (11%) and health, safety and environment (11%).

The upstream roles are proving the most challenging to fill. As more workers reach retirement age, their skills and expertise are at risk of being lost unless companies can implement effective succession plans. In fact, the survey has found that 10% of employers have had to pay retirees to come back to take unfilled job openings due to the skills shortage. This is particularly true in North America (13%).

In order to attract new talent, companies are having to offer higher salaries, which of course, has an impact on companies' bottom lines. To engage the next generation of upstream workers, companies should also focus on creating an attractive benefits package that offers what young people are looking for in a role. Flexible working, bonus schemes, and transport expenses for



Employers need to secure their talent pipeline by influencing the next generation of workers.

Image Credit: Adobe Stock

example, are all appealing incentives to younger workers.

Workers changing priorities?

While considering the challenges recruiters are currently facing in securing a talent pipeline, the other side of the coin seems gloomy as workers change their priorities. The survey finds that 43% of workers want to leave the energy industry all together within the next five years. What's more concerning is that the top-performing employees, who have been promoted twice or more in the last 12 months, are 28% more likely to be planning an exit from the energy industry within five years.

Looking deeper into why top-performing employees are leaving the energy industry, the report has cited that the top reason is personal lifestyle changes (22%),

followed by low salary (22%) and poor safety training (20%).

Therefore, it is important for companies operating in this sector to update their branding to align with the values of the next generation. Adopting a structured salary scheme can also encourage younger workers to stay in their current role, as they will have a clear progression path to aspire to.

Gareth Ford, business development manager at Oilandgasjobsearch.com, said, "Young candidates welcome internship opportunities, which companies can create through developing stronger partnerships with specialist colleges and universities globally. Companies that create engaging content for social media can develop a more powerful image that demonstrates their values. Embracing social media and online career platforms can improve engagement with new talent and help plug skills gaps."

African workers see a positive future for themselves

In Africa, most workers see a positive future for themselves, with only 31% considering leaving the industry within the next five years (the lowest percentage

globally). By contrast, 49% are definitely not considering leaving the industry at this stage.

Recruiters in Africa opined that the biggest challenge in energy is that the sector is constantly facing cycles of boom and bust, which leads to unpredictability (36%). The main reason for skills shortages in the region is a lack of succession planning (45%). The main causes of skills shortages in Africa, according to recruiters, are inadequate succession planning for knowledge transfer/skills retention; loss of expertise due to ageing workforce; strict immigration laws preventing access to talent globally; education and training; environmental consciousness etc. To overcome these challenges, recruiters are focusing on training and developing the existing workforce (52%).

In the long term, employers need to secure their talent pipeline by influencing the next generation of workers. Partnering with schools and colleges and offering apprenticeship programmes can be a good way of raising awareness of career opportunities in the industry and providing insights into how energy careers can progress. ♦

“ Companies need to focus on upskilling workers to keep up with demand for specialist expertise.”

AFRICAN RIG COUNT

COUNTRY	Dec 2020	Jan 2021	Dec 2021	Jan 2022
ALGERIA	22	19	34	33
ANGOLA	3	4	6	6
CAMEROON	0	1	2	2
CHAD	3	3	3	3
CONGO	0	0	1	1
CÔTE D'IVOIRE	0	0	1	1
EQUATORIAL GUINEA	0	0	1	1
GHANA	0	0	1	1
KENYA	3	3	4	4
LIBYA	11	11	14	15
MAURITANIA	0	0	0	0
MOROCCO	0	0	0	0
MOZAMBIQUE	0	0	0	0
NIGERIA	7	6	6	6

Source: Baker Hughes

GeoVolve HAMMER system set to halve geothermal well capital expenditure

HYDROVOLVE, A GLOBAL energy technology firm, has launched GeoVolve HAMMER, a percussive drilling system which has the capacity to cut well capital expenditure of geothermal wells by 50%.

Powered by HydroVolve's field proven INFINITY engine, GeoVolve HAMMER uses percussive impulse energy to fracture rock ahead of the drill bit, enabling deep drilling into hot, hard rock easier and faster. Operated simply by the flow of pressurised drilling fluid, GeoVolve HAMMER can operate in hazardous environments at extreme temperatures for extended periods.

Currently, the cost of geothermal drilling can account for up to 50% of total well project costs. Drilling through hard rock using conventional rotary methods causes drill bits to wear, dull or break down rapidly after short drilled depths and this results in the need to regularly recover the failed drill bit to surface for replacement.



The GeoVolve HAMMER uses percussive impulse energy to fracture rock.

The percussive drilling technique, however, is proven to speed up the drilling rate of penetration (ROP) in hard rock by up to 10 times or more. GeoVolve HAMMER's percussive drilling method is less damaging to the drill bit, meaning the bit can drill deeper for longer, further reducing equipment-related costs and boosting time efficiencies. The solution has the potential to create significant cost savings for the

geothermal sector by decreasing project time by weeks or in some cases, months.

GeoVolve HAMMER is a simple plug-and-play system featuring an integrated system design approach, which allows it to be compatible with any bottom hole assembly (BHA). It is fully configurable and does not interfere with measurement while drilling (MWD) or steerable systems, meaning it can be deployed without compromising the performance of the other downhole systems.

Peter B Moyes, founder of HydroVolve, commented, "With GeoVolve HAMMER, we're transforming geothermal economics using oil and gas technology innovation and expertise. Where previous percussive drilling tools have lacked consistency and reliability, GeoVolve HAMMER has the capability to overcome all previously met challenges by providing resilience, longevity, and thermal capability.

McDermott unveils carbon footprint calculation tool

MCDERMOTT INTERNATIONAL HAS launched ArborXD, a web-based tool that supports carbon-conscious decision making for energy customers seeking pathways to net-zero operations.

“ArborXD is another demonstration of the powerful combination of McDermott’s integrated engineering expertise, innovation and commitment to advance and enable our customers’ sustainability goals,” said Samik Mukherjee, executive vice-president and chief operating officer.

“It is an energy industry differentiator that will help quantifiably reduce the operating footprint of the facilities we design and build,” Mukherjee added.

Embedded as early as the design phase, ArborXD is applied throughout the energy project life cycle — whether a concept, front-end engineering design or an engineering, procurement, construction and installation project. ArborXD provides customers access to life cycle footprint estimates, cost tradeoff analyses, emission reduction pathways and environmental impact assessments.

Rachel Clingman, executive vice-president of sustainability and governance at McDermott, commented, “ArborXD directly advances McDermott’s commitment to deliver net-zero facilities for the energy industry and provides a meaningful advantage as our customers work to assess and mitigate emissions.”

Strohm and Evonik’s Carbon Fibre PA12 for TCP receives DNV certification

STROHM AND EVONIK have been awarded the full certification from DNV, attesting that the unidirectional Carbon Fibre PA12 tape ‘VESTAPE PA12-CF’ (PA12) used for Strohm’s thermoplastic composite pipe (TCP) is fit to use for dynamic sweet and sour hydrocarbons, water, and gas injection applications according to DNV-ST-F119.

The two companies, in partnership with the Netherlands Aerospace Centre (NLR), have led the way in the development, qualification and supply of PA12 for TCP applications following an intensive investment and testing programme over the past five years.

The novel knowledge-based approach introduced in DNV-ST-F119 and fully utilised by Strohm



Image Credit: Strohm

PA12 is a fully non-metallic, corrosion-resistant solution.

and Evonik has been trailblazing in seeking a fundamental understanding of the material to demonstrate the lifetime performance of a product operating in a challenging chemical, thermal and

mechanical environment. It has established a relationship between the functional requirements of a pipe and the performance characteristics of its materials.

NLR provided the main composite testing facilities which allowed parallel dynamic and long-term testing, thus speeding up the process significantly compared to traditional sequential testing.

PA12 is a corrosion-resistant solution. Due to the use of carbon fibres, it is exceptionally resistant to fatigue-based failures, marking it a perfect choice for any dynamic application from jumpers to flowlines and risers, including sweet and sour hydrocarbon, water and gas service.

Intoware launches WorkfloPlus-Web for frontline oil workers

DIGITAL WORKFLOW LEADER Intoware has launched its next-generation SaaS digital work-instruction platform for web browsers ‘WorkfloPlus-Web’, which aims to connect the oil frontline workforce.

This new iteration enables oil and gas operators to quickly and easily transform paper-based

procedures into smart digital workflows that are now accessible via a web browser, while opening up the platform to operating systems such as Microsoft Windows for seamless integrated working.

“Our developers have listened to customer feedback and found new ways for workers to create,

access schedules and manage maintenance tasks using WorkfloPlus,” said Lee McDonald, chief technology officer, Intoware. “While already available on Android and iOS, ‘WorkfloPlus-Web’ gives accessibility via your web browser, so frontline workers will be able to do everything they can do on their mobile or wearable device, now via their desktop or device browser.

“WorkfloPlus is built with Open APIs that connect the platform with third-party systems such as ERP, PLM, CRM and asset management. As it’s unlikely that WorkfloPlus will be the only digital ‘tool’ within your business, as work being carried out may require information held in existing systems which means they need to connect so data can flow easily.



Image Credit: Intoware

This new iteration enables oil and gas operators to quickly and easily transform paper-based procedures into smart digital workflows.

Logan Industries delivers subsea grease injection unit

LOGAN INDUSTRIES INTERNATIONAL Corporation, a global machine designer, manufacturer, field service and repair company, has delivered a subsea grease injection unit as part of a complete subsea wireline pressure control system for a subsea oil and gas company.

The grease injection reservoirs and monitoring/switching unit was part of an entire system, complete with: surface intervention type hydraulic power unit (HPU); reeler and umbilical; subsea grease head and lubricators; and subsea connections.

The customer required a solution to provide grease to their subsea grease head by using a subsea grease supply point that also had the capacity for switching between primary, secondary and emergency circuits, and allowed visual monitoring of how much grease remained available for use during operations.

In designing and delivering a 10,000 psi grease system with 40 gallons of grease fully compensated for 10,000 ft depth, Logan engineered a very straightforward, low-tech solution. The system was capable of being powered by either a remotely operated vehicle (ROV) via hot stab or by the surface HPU through the connecting umbilical.



Image Credit: Logan Industries

The system was capable of being powered by either a remotely operated vehicle (ROV) via hot stab or by the surface HPU through the connecting umbilical.

Dean Carey, technical director, Logan Industries, said, "The visual monitoring portion we ultimately delivered in this project is unique for this type of system, pairing accumulator/cylinder technology with the subsea environment."

Emerson introduces silencer to protect workers from gas process noise

EMERSON HAS INTRODUCED FISHER WhisperTube Modal Attenuator for noisy gas or vapor applications in a wide range of industries.

The modal attenuator is a full-bore device offering 15 decibel sound suppression to reduce noise inside pipes produced by sources upstream, such as control

valves or other devices. It is installed downstream of these types of devices in place of a pipe spool piece, generates no additional pressure drop, and has no impact on process flow.

Industrial users have long searched for a solution to reduce process piping noise, but until now all solutions have generated

significant pressure drop, reduced flow, and/or introduced obstructions. This has led some users to install acoustic insulation to pipe sections to reduce noise, but this can be very costly and cumbersome to install, and it does nothing to reduce internal piping noise.

Leading applications for the modal attenuator include those where upstream process flows are changed by control valves, pressure relief valves, pumps, compressors, and other devices that generate noise. Many of these devices must be installed in lengths of piping with no flow restrictions downstream, and the modal attenuator works particularly well in these applications because it introduces no such restrictions.

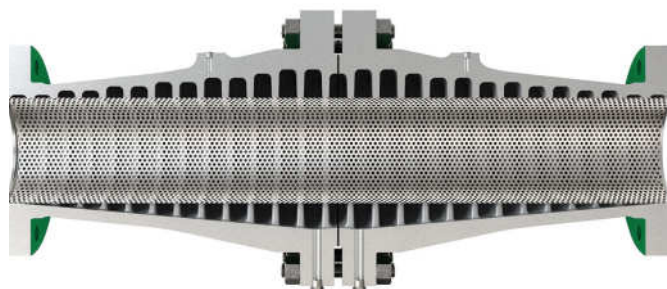


Image Credit: Emerson

WhisperTube devices are offered in sizes from two inches to 12".

Veolia launches TERION S, a standard unit producing high grade deionised water

VEOLIA WATER TECHNOLOGIES has launched TERION S, a standard single-skid unit combining single pass reverse osmosis (RO) and continuous electrodeionisation (CEDI) to produce high-grade deionised water for laboratory, power and general industry applications.

This product was developed in house by the company's internal manufacturing and global logistics platform.

In May 2020, Veolia Water Technologies began to build its TERION RO-CEDI product line by introducing TERION, which produces deionised water for power applications, in particular for boiler feed and turbine injection. Thanks to its standard design based on European norms, this plug-and-play product is easy to use by maintenance technicians and end-users.

Now, Veolia extends its TERION range and introduces the new TERION S. Smaller but powerful, this standard, single-skid unit combines single-pass reverse osmosis and continuous electrodeionisation to produce high-grade deionised water which meets the highest global lab and industrial standards. Seven models are available covering flow rates from 110 to 4,000 L/h. The TERION S is a plug-and-play and user-friendly for technicians and customers.

ZALUX releases new high bay hazardous luminaire range

ZALUX, A LEADER in industrial lighting solutions, has announced the release of its new OREX high bay luminaires ATEX and IECEx certified for hazardous areas.

Available in models for Ex Zone 1 (OREX 1) and Ex Zone 2 (OREX 2) and ideal for oil and gas or petrochemical applications, the luminaires give the right light quality and intensity needed for the highest of hazardous applications, while providing energy efficiency and robustness.

David Franch, director of sales, marketing, and product management at ZALUX, said, "OREX is the latest addition to our hazardous lighting ranges. It has been designed to withstand harsh industrial environments, provide exceptional lighting quality, and, using latest LED technology, optimise energy consumption. Made in Europe and based on 40 years of luminaire design experience, customers can be assured of excellent quality, reliability, performance and safety."

OREX luminaires are available with DALI control and provide luminous flux up to 40,500 lm at a remarkable efficiency of up to 150 lm/W. Constructed from high quality mechanical components, the units are suitable for installation outdoors and, with features including a huge temperature range from -32°C to 75 °C, are designed to withstand heavy industrial environments. Housings are made from copper-free aluminium for use in



Image Credit: Adobe Stock

The luminaires give the right light quality and intensity needed for the highest of hazardous applications.

hazardous areas and a tempered glass diffuser make them resistant to weather and harsh industry conditions.

The design of the OREX luminaires ensures easy installation. Both models are available with different installation accessories for pipe/tube or rotatable wall mounting and can be purchased for installation with a cable gland and cable (length from 0.25m to 3m) already connected, especially designed to be mounted on high poles with a junction box at the bottom of the pole. Additionally, OREX 2 can be attached directly to a connection box for ultimate installation flexibility.

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ADVERTISER'S INDEX

Ariel Corporation.....	36
Eko Signature	35
Frigmaires Engineers	19
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'WITHOUT ENERGY, THERE IS NO ECONOMIC GROWTH'

DNG Energy believes in serving people's needs by providing energy – and providing energy in a clean and sustainable manner – leaving the world a better place.

Aldworth Mbalati, CEO of DNG Energy, discusses more. Deblina Roy reports.

How is DNG Smart Gas providing a cleaner alternative to traditional fuels like diesel and petrol?

Aldworth Mbalati (AM): DNG Smart Gas is a cheaper and cleaner alternative to the traditional fuels like diesel and petrol in the South African market and it is the first step in DNG Energy's contribution to the nation's sustainable development. This fuel alternative offers cleaner, safer and lower fuel costs helping South Africa meet its targets in reducing greenhouse gas from production to use.

How DNG aims to catalyse the growth of a new gas economy in South Africa?

AM: Today, the world is interested in having a carbon-neutral economy, an economy that is going to use fuels that are safer and cleaner to the environment. Also, in order to catalyse growth, we need cheap, reliable and sustainable fuels. For example, if we give fuel to a trucking company at half the cost, that trucking company passes the cost saving to its customers, thus ensuring their profitability in broader terms. It actually catalyses the economy in circulating more money to the entire LNG value-chain.

Without a shadow of doubt, LNG has the potential to drive significant growth and job creation for South Africa. We move LNG in cryogenic virtual pipeline, which led to the process to develop cryogenic based filling stations. Developing a

cryogenic industry will ensure that some South African will have get upskill their set of expertise to ensure that the industry grows. This means we're bringing more people into the corporate economy and the LNG sector has become a catalyst for job creation.

How are the 'energy-transition' goals affecting South Africa's oil and gas economy?

AM: Gas is going to play a very huge role in achieving the energy transition. If you want to go through a net zero carbon economy, you really need natural gas to play a role. Natural gas can provide

base load power, providing fuel as a source of transportation and industrialisation.

By 2050, it is estimated that the population of Africa would quadruple in number and in order to service that economy you need fuel and base load power. Gas will play a very important role in terms of catalysing society.

Natural Gas is a fossil fuel that has less carbon emissions. Therefore, attracting the right kind of financing is not a challenge. One thing is certain that we're not going to get a net zero carbon solution if we stop industrialisation, as we can't run factories today without power. We need power and energy for that.

To achieve this, DNG is working on the smart gas and the LNG bunkering sector. We're working on the biofuel segment. We're planning to launch a specific product where we'll be supplying bio jet fuel – a sustainable aviation fuel. 🔥



Image Credit: DNG Energy

Aldworth Mbalati is the CEO of DNG Energy.

“Natural Gas is a fossil fuel that has less carbon emissions. Therefore, attracting the right kind of financing is not a challenge.”



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