Upstream Highlights in African Oil & Gas Landscape

By

E. Amadasu
Head, Upstream Monitoring & Regulations
Department of Petroleum Resources
Nigerian (Oil & Gas Industry Regulator)

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The Petroleum System

Maturation, Expulsion, Migration, And Traps

Organic Matter → HC Accumulation
Exploration, Evaluation, Development

- Seismic Prospecting
- Confirmation of Discovery
- 3D Reservoir Simulator

Identification of Prospects

3D Reservoir Simulator

Drill?

From Prospects to Reserves

Evaluation, Appraisal Wells

Economic Assessment

Production Forecast vs Development Cost

- Field Development
- Field Production
- Field Abandonment

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Africa in Perspective (2018 Performance)

**Crude Oil**
Proven Reserves: **126.5 Billion bbl** (7.5% of the world's proven reserves. 128 Billion barrels in 2017.
Production: **8.1 MMBopd**, 8.7% of global production, increased by 0.3% compared to 2017.
Consumption: **4.0 MMBopd**, 4.1% of global consumption, Same as 2017.
Exports: **6.1 MMBopd** which was 10.1% of global exports

**Gas**
Proven Reserves: **487.8 Tcf** (7.1% of the world's proven reserves. Did not change significantly from 2017.
Production: **7.95 Tcf**, 6.1% of global production, increased by 0.3% compared to 2017.
Consumption: **5 Tcf**, 3.9% of global consumption, Increased by 0.3 Tcf over 2017.
Pipeline Exports from Africa: **1.6 Tcf**, which was 6.1% of global

**Discoveries**
Global: **7.5 Billion boe**. Africa had two major gas discoveries totaling 1.5 billion boe in Senegal-Mauritania Basin. Repsol

**Unconventional Resources**
Shale Gas: Algeria is 3rd globally with estimated 707 Tcf or **121.9 billion boe** recoverable reserves. South Africa is 8th globally.
Technically Recoverable Shale Oil: Libya is 5th globally at **26 billion barrels**

**Refineries**
Throughput: Same as 2017 at **2.1 MMBopd**, 2.5% of global

**Ongoing/ Planned Bidding Rounds**
Countries: Algeria, Nigeria, Cameroon, Congo, Coted'Ivoire, Egypt, Gabon, Gambia, Ghana, Kenya, Senegal, Madagascar, Sierra Leone, Somalia, South

**LNG**
Capacity & Utilisation: Capacity was at 68.3 Mtpa (19% of global). Utilisation is **64%**, increased significantly by 13% over 2017. Global utilisation is 84%.
LNG exports: 41 Mtpa with 37 Mtpa from Nigeria, Algeria, Egypt and Equitorial Guinea,

Data Source: Rystad, Pwc, EIA

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The decline in M&A activity in Africa reflects in its share of global upstream oil & gas transactions which dropped from 16% to 4% between 2013 and 2017.

Data Source: Rystad, Pwc, EIA
Discoveries and Exploration Spends

- Huge decrease in amount spent in exploration between 2014 and 2018
- Rystad Energy predicts an average 18% (Africa) and 15% (global) year-on-year increase in exploration spend for the 12 years period covering 2019 – 2030
- Decline in discoveries; mostly due to challenges posed by above-ground risk (non-technical risk).

- Unconventional Discoveries on the rise
- Projections for Expl. spend is looking up for Africa; driven by the expected growth in Exploration in the East African region.

Data Source: Rystad, Pwc, EIA
Huge decrease in amount spent (CAPEX) between 2014 and 2018 (42% drop)

Rystad Energy predicts an average 7% (Africa) and 4% (global) year-on-year increase in CAPEX for the 12 years period covering 2019 – 2030

Projections for CAPEX is looking up for Africa; driven by the expected growth in investment especially in West Africa and North Africa.
Break-even Prices

Observed global discovery trend is driven by sustained drop in break-even prices over the last four years

Breakeven has come down across major basins with West Africa delivering more modest gains

Indicative of lack of (or poor) cost-cutting measures in West Africa: additional scope for optimisation measures to be applied by means of technology, for example.

Data Source: Rystad, Pwc, EIA
World oil supply analysis (The past & different scenarios of the future... Like King Hubbert’s

3 alternative resource base volumes.

- 2% demand growth extended up to the production peak
- Decline path from the peak at a constant R/P ratio of 10.
- World conventional crude oil production would be expected to peak in 2037 at a volume of 53.2 billion barrels per year.

Data Source: EIA

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World oil supply analysis
... Will the world ever physically run out of crude oil?

12 scenarios of the pre-peak production growth rate. Post-peak decline remains fixed at R/P=10.

Depending on actual demand, peak production could occur anywhere between 2021 at a volume of 48.5 billion barrels per year and 2112 at a volume of 24.6 billion barrels per year.
Potential supply crunch in the 2020s .... a blessing?

Yes! Will keep prices high and ensure a market for Africa’s oil and gas.

- ✔ investment justification for new oil & gas plays on the continent
  - ✔ Growth in global demand is fairly stable
  - ✔ Oil inventory levels in developed countries have been drawn down recently

- Drop in Exploration Spending
- Decline in new discoveries
- Supply disruptions due to geopolitical issues
- Deferred maintenance in an attempt to cut costs
New Technology in Africa Upstream O & G

- Drone
- Scanwell
- 4-D Seismic
- Smart Room
- Virtual Reality
- Rig Automation
- Molecular Tracking
- Digitised Work Processes
- Crude Oil and LNG Vessel Tracking

- Facility inspection in Eni fields across Africa and Globally (Eni/Sky-Futures)
- Real-Time acoustic Technology and Automated Surveillance: Perfex/DPR (Nigeria)
- Egina Field (Total Nigeria), Deep Water Angola (ExxonMobil), Bonga Field (Shell Nigeria)
- Bonga (Shell Nigeria), Akpo (Total Nigeria), Agbami (Chevron Nigeria), Egina (Total Nigeria)
- Shell used VR to drill a simulation well at reduced cost
- Robotic Oil Rig (WeST Drilling Products), Online Real-Time Monitoring of Rig Movement (DPR, Nigeria)
- DPR Nigeria/Huawei
- Growth of digital platforms, automation of workflows, online reporting and removal of paperwork
- DPR Nigeria/Anchor Specialty/Kepler
Changing Landscape of Upstream Business

- Algeria’s SH 2030: New development strategy based on partnerships with technology firms
- Egypt’s newly created Natural Gas Regulatory Authority to liberalize gas market
- Gabon’s regulatory revisions to encourage exploration activities in deepwater offshore
- South Sudan’s negotiating with new partners
- Nigeria’s PIB, Gas Commercialisation Policy, New Frontiers, Deepwater Strategy, Accelerated Onshore Development, Automation
- Uganda’s FID for refinery and crude export pipeline project expected by the end of Q1 2019
- Equatorial Guinea local content policy
- Mozambique’s FID on Coral South FLNG. Agreed to Export future gas production
- Angola’s newly created National Agency of Petroleum and Gas to administer sell of oil blocks reduce bureaucracy
Acreages Administration Across Africa

- **Ghana**: Ghanaian Licensing Round is ongoing: **Six (6) blocks** in the Tano/Cape with one block reserved for GNPC.

- **Madagascar**: Bidding round for the exploration of **fourty-four (44) offshore blocks** in the Morondava Basin west of the island is ongoing and will continue until 30 May 2019.

- **Cameroon**: Launched a Licensing Round in 2018 for **eight (8) blocks** namely, Bomana, Bolongo, and Bakassi in the Rio del Rey (RDR) Basin, and Etinde, Ntem, Elombo, Tilapia and Kombe/Nsepe in the Douala/Kribi-Campo (DKC) Basin.

- **Congo**: License Round Phase II 2018-2019 is ongoing, and involves **five (5) blocks** in the shallow offshore, **five (5) blocks** in the deep and ultra-deep offshore, **three (3) onshore blocks** in the Coastal Basin and **five (5) onshore blocks** in the Cuvette Basin. Closing date of the call for tender is June 2019.
Nigeria: Nigerian Gas Flare Commercialization Programme (NGFCP). Gas Flare Point Bid Round is scheduled for 2019. Programme Launch – Q3, 2018. 178 gas flare points have been identified.

Gabon: launched its 12th Offshore Licensing Round in November 2018, with thirty-five (35) shallow and deepwater blocks. The bid deadline has now been extended from April to September 2019.

Somali: The 1st Somalia Licensing Round, launched in London in February 2019. Fifteen(15) offshore blocks along the Somali Coastal Basin are being made available with bids due in November.

• **Equatorial Guinea**: April 2019: All open acreage in Equatorial Guinea is to be made available in the EG Ronda 2019 including the Fortuna gas complex.

• **Uganda**: To launch its 2nd Licensing Round in May 2019, acreage in the Albertine Graben.

• **Sudan**: Plans to offer acreage in Q3 2019.

• **Mozambique**: Anticipated 6th Licensing Round in Q3 2019, with acreages in the Zambezi and Angoche.

• **Egypt**: Western Mediterranean acreage and frontier Red Sea acreage may be offered in 2019 rounds.
The Deals that Count

The Hotspots Awaiting FIDs

1. LNG Train 7 (from 22 million tpa to 30 million tpa capacity)
2. Deepwater Bonga North ($8.9 billion)
3. Deepwater Bonga Southwest/Aparo ($3.9 billion)
4. Assa North/Ohaji South
5. Ultra-deepwater Zabazaba-Etan project ($11 billion CAPEX planned)
6. Preowei Development
7. Ikike Project

Nigeria

Mozambique

Tanzania

Equatorial Guinea

Egypt

Senegal/mauritan

Congo-Brazzaville

$30 billion LNG plant at Lindi

1. Coral FLNG,
2. Anadarko’s Area 1 project

Fortuna FLNG

Baltim SW project

BP/Kosmos’ Tortue LNG
Invest in Africa…. the outlook is positive

Population growth

Unexplored acreage

FIDs on Large Scale Gas Projects

Improved Legislation & regulatory certainty

Urbanisation

Increasing HC demand

Exploration Spending Cuts

Low Reserves Replacement

Sanctions on Iran

Venezuela’s Production

Abundant Gas

Untapped Unconventional

Technology & automation

Relatively Isolated from the changing energy mixes

Potential global supply crunch in the early 2020s
Conclusion

- Projections for capex and exploration spend in Africa are positives.

- Countries should not only focus on mitigating site security risk, but a broader, more holistic and integrated regional/continental risk management approach should be discussed and adopted.

- Create a politically stable and responsive legislative environments.

- Take advantage of emerging technologies; evaluate, adopt and use so as to maximise recovery and reduce cost.
Conclusion (2)

- Adaptations of an end-to-end automation of the upstream sector of the Industry by new and upcoming players will enhance efficiency.

- Create an Africa hydrocarbon market across the oil and gas value chain.

- Attractive fiscal and regulatory regime should be adopted.

- Unique Industry reforms that will open up, create jobs, lead to value creation to citizen, government and environment.
Mercie

gracias

Thank you