

West African Exploration

June 2018

Contents: West Africa exploration

- Countries' Commercial Attractiveness Factors.....
- Active West African Farm-Outs.....
- Angola.....
- Cameroon.....
- Congo Brazzaville.....
- Gabon.....
- Gambia.....
- Ghana.....
- Guinea Bissau.....
- Ivory Coast.....
- Mauritania.....
- Morocco.....
- Namibia.....
- Nigeria.....
- Senegal.....
- South Africa.....
- Appendix.....

Countries' Commercial Attractiveness Factors

- We have ranked the commercial attractiveness of exploring for oil and gas in the countries we are analysing on a number of different criteria which are explained below:
 - **Fiscal attractiveness:** The main criteria we have used to evaluate this is the estimated value of a discovered barrel in the country, the IRR and the average contractor take at a price of \$60/bbl.
 - **Ease of doing business:** This is the World Bank ranking based on how efficient the business environment is and how strong the legal institutions are.
 - **Operational risk:** The factors considered are the labour market, trade and Investment, logistics and crime and security using data from BMI Research.
 - We have also included **Economic Risk** and **Political Risk** using data from BMI Research.
 - **Investor sentiment on the region:** Although this is related to the ease of doing business and the country risk, there may also be specific reasons for investors to be sceptical on a particular country (e.g. recent exploration failures or failed M&A transactions).
 - **Existing oil infrastructure:** The more existing oil infrastructure there is in country, the easier and lower cost a potential development should be (e.g. tie-back opportunities/service capacity availability).
 - **Ease of monetising gas:** Even though most of the focus may be on finding oil, dealing with gas if found is an important issue. If flaring isn't possible the ability to either sell gas into the local market is important.
 - **Existing oil majors present:** The more existing companies that are present in a country, the more likely it should be that a farm-out could get done. A lot of companies are looking to shrink their footprints so a new country entry for some larger companies may be unlikely in the current environment.

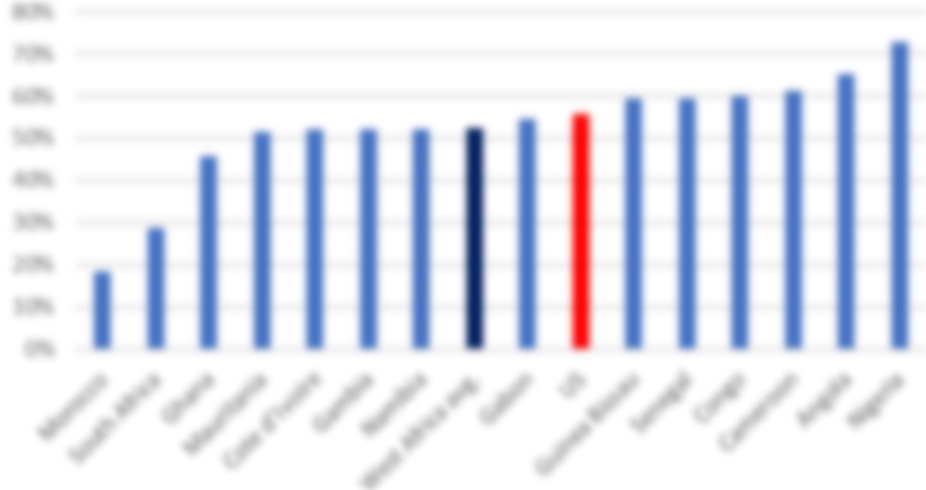
Countries' Other Attractiveness Factors

Comparison of non-fiscal factors influencing countries' attractiveness for oil and gas investment on a scale of 1-10 (10 best)

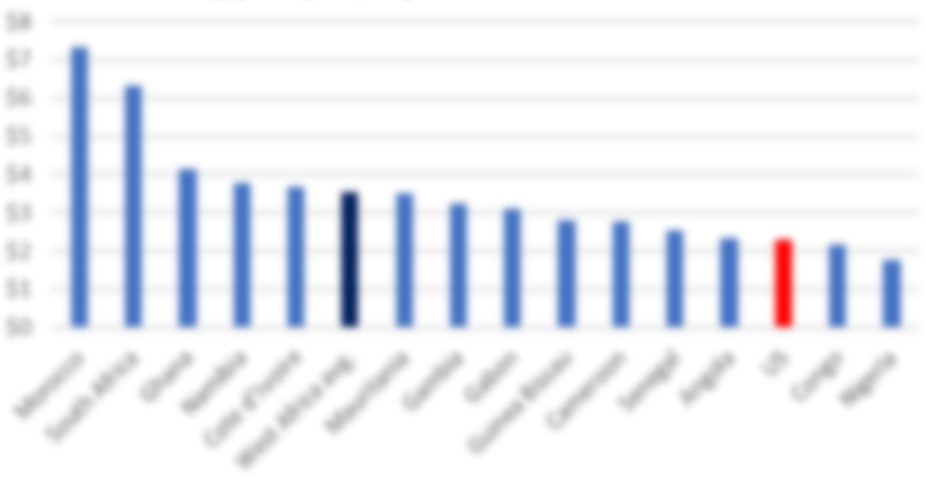
	Ease of doing business	Operational risk	Business risk	Political risk	Quality of infrastructure	Cost of manufacturing gas	Energy investment in % GDP	Quality of labor process	Average
Angola	6.8	5.1	6.8	6.7	6.8	6.8	2.8	6.8	6.8
Cameroon	5.8	5.5	5.7	5.5	7.8	5.8	5.8	5.8	6.2
Congo	6.8	2.8	5.8	6.2	7.8	5.8	5.8	6.8	6.2
Costa Rica	2.7	5.8	5.8	5.8	6.8	7.8	6.8	5.8	6.7
Egypt	5.2	5.5	6.8	6.5	6.8	5.8	7.8	6.8	6.8
Ghana	2.8	5.7	5.5	5.5	5.8	5.8	6.8	5.8	5.8
India	6.7	6.8	7.2	6.8	6.8	5.8	7.8	6.8	6.8
Indonesia	6.7	2.5	5.2	6.8	5.8	5.8	5.8	5.8	5.5
Malaysia	2.5	2.8	6.8	5.5	5.8	5.8	5.8	5.8	5.8
Morocco	6.8	5.5	6.8	5.5	5.8	5.8	5.8	6.8	6.8
Norway	6.8	6.8	6.8	6.5	2.8	5.8	5.8	5.8	6.8
Russia	2.8	5.8	5.8	5.8	5.8	6.8	6.8	5.8	5.8
UK	5.7	5.5	5.8	6.8	2.8	7.8	5.8	5.8	5.8
Uruguay	2.8	6.8	6.8	6.7	5.8	6.8	7.8	5.8	6.5
W. Africa avg.	2.8	5.8	5.7	6.8	6.8	6.8	6.8	6.8	6.2
Oil Producers	6.7	7.8	6.8	7.8	6.8	6.8	6.8	6.8	6.8

Ranking of countries attractiveness factors

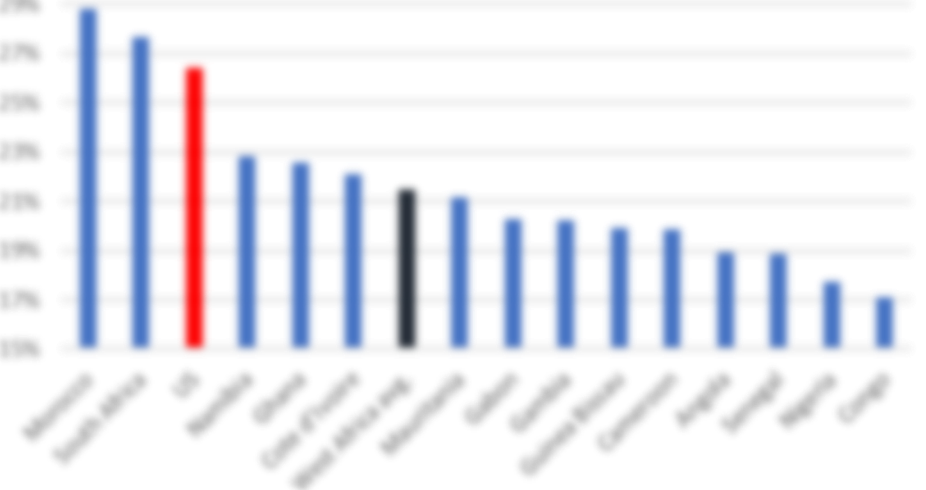
Government take



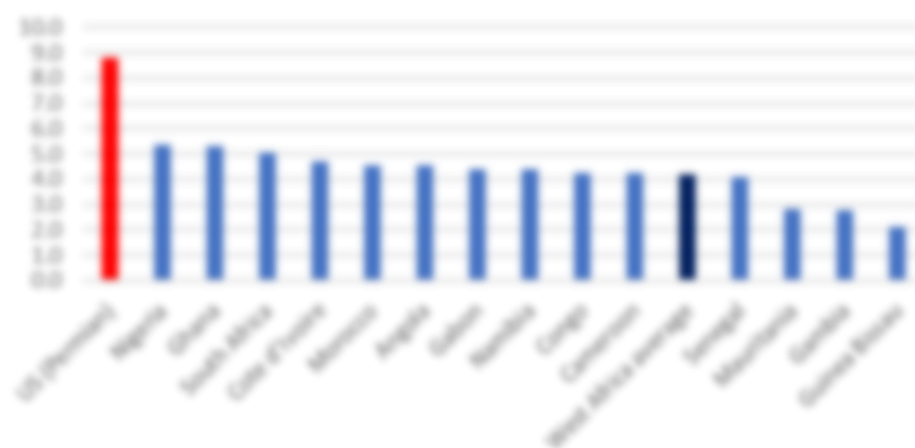
NPV10 (\$/boe) at \$60/bbl Brent for various countries



IRR



Attractiveness based on average of all other non-fiscal term based factors (unweighted)



Source: Akap Energy

Gabon exploration

Key issues and fiscal terms

There has been a fair amount of corporate activity in Gabon over the last few years. There was interest in Gabon pre-salt exploration a few years ago but this was dampened by the lack of oil discoveries (only gas found). Interest may pick up in Gabon deepwater exploration after recent discoveries outboard of existing shallow water fields (Etama/Dussafu). Gabon is a significant oil producer with ~250m bbl/d of production and >3B bbl of proved reserves and it does have a number of pre-salt producing fields onshore (notably Shell's Rabi Kounga field) and offshore (e.g. Etame complex). There are two basins: North and South separated by a fault. 2016 elections in Gabon resulted in the controversial re-election of President Ali Bongo. Gabon operates a PSC contract model with a 4.5-11% royalty, 70-75% cost recovery, production based contractor share of profit oil between 25-50% and no corporate tax. There is a tax and royalty regime for some fields.

Recent exploration

Woodside Energy in April 2018 announced a 2nd discovery – Ivela (E13) encountered a 78m gross oil column; this follows on from Petronas' Boudji (F14) discovery last month on an adjacent block, which could be a potentially large oil discovery. The prospect is on the edge of Total's Diaba block to the north containing the Diaman gas/condensate find made in 2013 estimated to be ~100mmboe. Eni' Raie North 1 well on its D3/D4 blocks in 2013 was presumed dry. During 2014 Ophir's high impact Okala-1, Affanga Deep and Padouck Deep wells in the north failed but Eni had a shallow water discovery, finding ~500mmboe of gas/condensate in place with Nyonie-Deep. Nyonie-Deep discovered gas in pre-salt syn-rift Dentale formation sandstone (locally called Coniquet Sandstone) that has low permeability. In the south, Tullow had a non-commercial gas condensate discovery with Sputnik East and Shell's first well N'Komi failed (residual charge - breached) but it did make a large multi-tcf gas find with the 2nd well, Leopard, encountering 660ft of net pay.

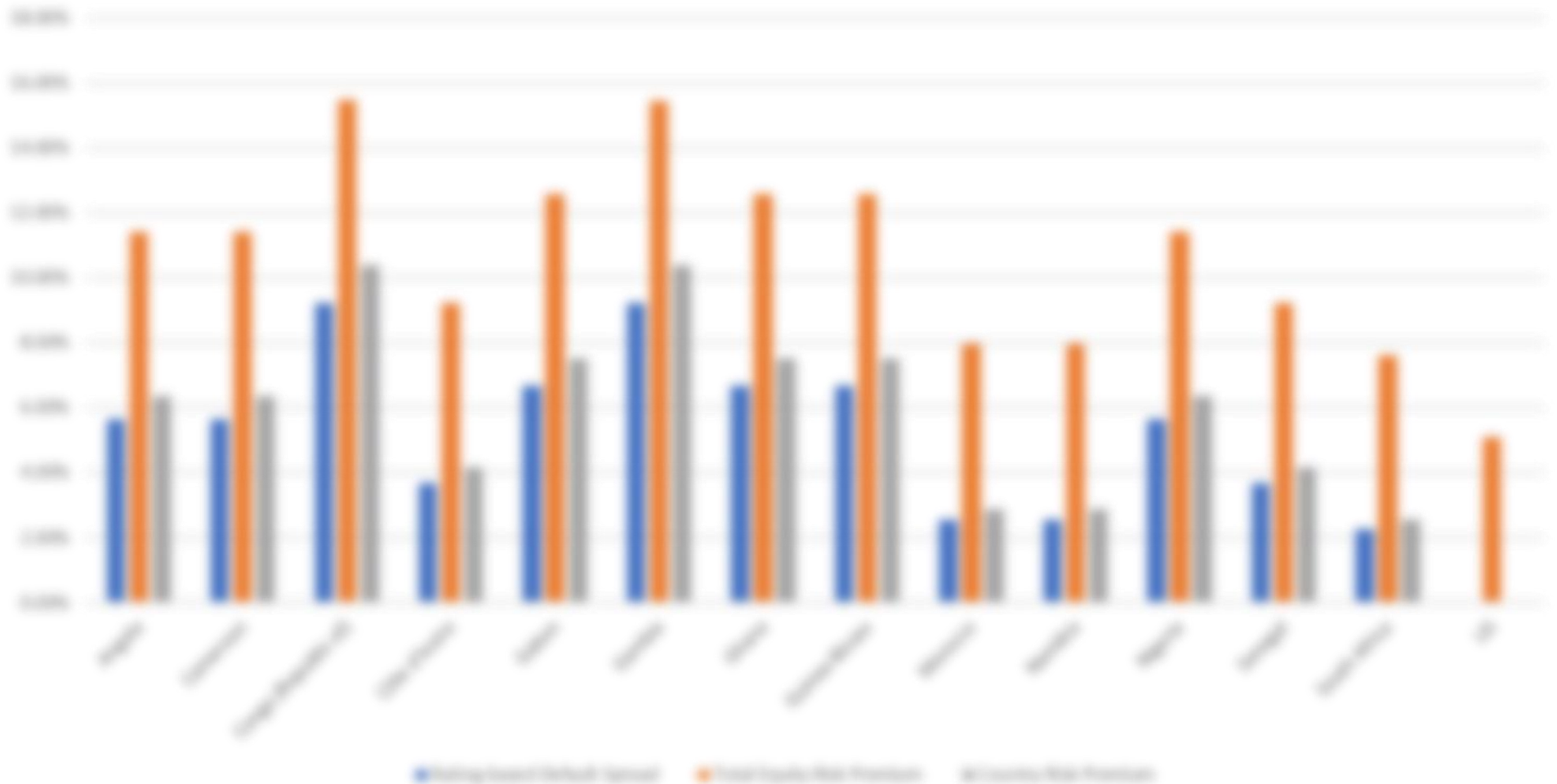
Key players

Private French company Perenco is the leading producer in Gabon and bought further assets from TOTAL in 2017. Eni has a number of shallow water blocks. CNR operates the Olowi field. Shell sold out of its Gabonese production assets to Carlyle backed Assala Energy for \$628mm but retains stakes in the offshore exploration blocks BC9/BCD10 alongside CNOOC. Marathon sold out of the Diaba License in Aug '17 to Woodside and Noble has also exited, where it was partnered with TOTAL, who is discussing renewing the licence with the Government. Repsol/Woodside are partners on Luna Muetse (E13) and Woodside is partnered with Petronas on Likuale (F14) and Noble on Doukou Dak. Impact Oil & Gas Limited has 100% stakes in nearby blocks D13/D14 and should see farm-out interest pick-up. Marathon holds a 100% stake in the Tchicuate block, which it is actively farming down. Petrobras farmed in to Ophir's Mbeli and Ntsina blocks with pre-salt potential but both have now exited the blocks. Ophir also exited the Nkouere, Nkawa, Manga and Gnondo PSCs. Vaalco has the majority of its value coming from the Etame field in Gabon where it is partnered with Addax (Sinopec) and Tullow. Harvest Energy sold out of the shallow water Dussafu development to BW Offshore (partnered with Panoro). Notably, Kosmos (with GALP) has licensed virtually the whole of Sao Tome, with the blocks located outboard of Gabon.

Planned activity

The 27m bbl Ruche North East prospect will start drilling mid-2018 at a gross cost of \$20m. The prospect is ~3km from the existing Ruche discovery wells and is a 4-way structure in the Gamba and deeper Dentale formations. Marathon plans to drill outboard of this on its Tchicuate block in 2018 too. We'd expect further exploration and appraisal activity on the Woodside blocks. Diaman South-1 or N'dem-1 had been proposed in the past on the Diaba block. Ophir had Prospect B on the Nkouere / Nkawa blocks with prospective resources of 1.8Bboe and a 16% chance of success but relinquished the blocks.

Country risk



- **BP:** in a country which is judged to be higher risk an additional 2% premium is added to the discount rate.
- **Eni:** WACC rates used for impairment test purposes in 2017 ranged from 5.3% to 15.8% in the E&P segment.
- **Tullow:** Uses 10% for Ghana, Equatorial Guinea and Ivory Coast and 13-15% for Gabon.

Disclaimer

Errors and omissions excepted. Whilst every effort has been made to ensure that the information provided is accurate, it does not constitute legal, tax or other professional advice and should not be treated as such.

Akap Energy Limited will not be liable to you in respect of any business losses, including without limitation loss of or damage to profits, income, revenue, use, production, anticipated savings, business, contracts, commercial opportunities or goodwill.

This disclaimer will be governed by and construed in accordance with English law, and any disputes relating to this disclaimer will be subject to the exclusive jurisdiction of the courts of England and Wales.