Africa drilling: A defining year

Pan-African 2014 drilling in focus

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A defining year

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2014 is set to be a landmark year in terms of African exploration, especially for investors in smaller independent E&Ps. In this report we look at a group of E&Ps that are targeting over 27bnboe from wells being drilled over the next 12 months that could, in the success case, open up more than 70bnboe of play opening resource. Our analyses take into consideration a range of criteria including resource size, geological and commercial risks, funding constraints and fiscal terms as we seek to identify those companies with the most compelling valuation upside. While almost all companies offer value at current share prices, a few consistently shine brightest across our various analytical lenses.

Valuation disconnect clearly evident

Despite recent gains, equity markets continue to excessively discount explorers and in particular small caps with poor liquidity and little or no asset diversity. This can be seen across multiple analyses including comparisons with DCF-risked resource valuations, analyst consensus target prices and, probably most significantly, industry terms determined from farm-outs.

Large price multiples on offer even on a risked basis

When considering net risked resource valuations we see substantial upside to current share prices across the peer group, although not surprisingly there is wide variability in our results. **Pura Vida Energy** and **Tower Resources** are probably the standout names, with Pura Vida offering 20x upside (even on a risked basis) from its Moroccan activities alone, while Tower is targeting an eye-watering 9.9bnboe (gross) from a single well (Welwitschia-1).

Funding and partners more important than ever

Funding is key for many of these smaller companies working in Africa, especially those with offshore activities where costs continue to rise dramatically. As such, both ‘running room’ and multi-well carries should be important considerations for investors, with **Hyperdynamics**, **Pura Vida** and to a lesser extent **Fastnet Oil & Gas** and **Canadian Overseas Petroleum (COPL)** all seen as compelling plays in this respect. **Sterling Energy** is the standout name in terms of straight cash coverage. Attracting strong partners is also the most compelling way to demonstrate comprehensive due diligence to what is a notoriously sceptical market.

Beyond 2014 – what next?

Above all, with escalating exploration costs under increasing scrutiny we look for management teams who can realise value in the success case and limit losses in the failure case. Geological uncertainties can be de-risked at costs far below the levels required to answer commercial uncertainties. Investors are likely to reward companies that recognise when to get out of exploration plays as much as when to get into them.

Companies in this report

Featured companies	Other companies
Canadian Overseas Petroleum	Africa Oil
Chariot Oil & Gas	BG Group
FAR	Bowleven Oil & Gas
Fastnet Oil & Gas	Cairn Energy
Hyperdynamics	ExxonMobil
Longreach Oil & Gas	Freeport McMoRan
Pancontinental Oil & Gas	GALP
Pura Vida Energy	Genel Energy
Sterling Energy	HRT
Taipan Resources	Jacka Resources
Tangiers Petroleum	Kosmos Energy
Tower Resources	Petrobras
	Repsol
	Tullow Oil

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Contents

Pan-African 2014 drilling: An introduction

In an environment where E&Ps (and particularly smaller, pure-play explorers) have fallen out of favour, we examine the peer group actively exploring in Africa over the next 12 months to see if existing valuations display any disconnects. We use a spectrum of metrics to assess the merits of the peer group; none are perfect but when assessed in the whole, we hope that ideas generated may appeal to investors.

In this report, we examine wells being drilled exclusively in Africa during 2014/early 2015 by smaller E&Ps globally. The next year should be an important time for exploration drilling across the continent, with six wells being drilled in Morocco alone (by Kosmos Energy, Cairn Energy, Freeport McMoRan, GALP and Genel Energy). Elsewhere, important wells will be drilled in Guinea by Tullow Oil and in Namibia by Repsol, while the Sunbird well currently being drilled by BG in Kenya could open up new plays. Small-cap explorers will be participating in many of these wells and are clearly most leveraged to the upside in the success case.

Our analysis points to a select group of companies as capturing the right balance of upside potential while offsetting some of the more obvious downside risks. Our analysis focuses on the obvious tangibles (resource size, costs, funding) as wells as assessing geological and commercial risks. As a screening tool we also extend this to consider the array of different fiscal terms on offer, something that is often missed with more basic analyses of the sector.

While our analysis is thorough, we recognise that it can only go so far. Assessing the value of intangibles is also critical when screening the sector. We recognise the inherent uncertainty that investors attribute to drilling and differences in valuation may be understood by looking at less tangible factors. For example, the strength and reputation of the operator is likely to be valued by investors, with heavyweights such as Exxon (COPL's partner), Repsol (Tower's partner), BG (Pancontinental Oil & Gas's partner) and Tullow (Hyperdynamics' partner) as partners in some wells. Freeport (Pura Vida's partner) is also a very large company (EV>$30bn) but may not be as well-known, at least among investors, in Africa. In saying this, the drilling experience Freeport brings is from its acquisitions of the established Plains E&P (Pura Vida's original partner in its Mazagan block offshore Morocco) and equally as importantly McMoRan Exploration, which has extensive deepwater experience in the Gulf of Mexico targeting similar plays to Magazan.

We are also constrained by data available. We work on estimates from companies although investors may be sceptical of some. Additionally, many of the wells could open up or exploit new areas, releasing billions of barrels of upside. While some companies openly talk about this upside and try to market on this basis, others do not and are consequently penalised in this analysis versus their more extroverted peers.

Finally, we look at the next steps. The increasing cost of exploration is starting to have an impact on investment decisions even for companies as large as Tullow. We argue that any meaningful offshore discovery by the small caps should be monetised by managements relatively early as the best value creation strategy, following the Cove Energy model.

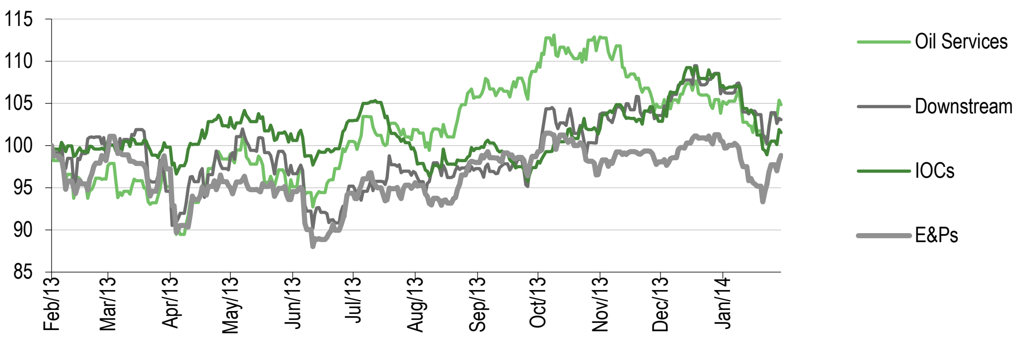
Macro environment: Not without its challenges

We come to our analysis of African E&P opportunities at a time when, barring some notable exceptions (eg Africa Oil), the sector as a whole has struggled. However, 2014 represents a tantalising opportunity for investors with an unusually large number of high-profile, high-impact exploration wells planned for the year.

E&Ps continue to be depressed and out of favour

As a group, E&Ps have failed to perform over the last few years, although they were broadly flat on a 12-month basis. However, they continue to underperform the other oil sectors, with IOCs, services and downstream all up around 10% (Exhibit 1).

Exhibit 1: 12-month indexed performance



Source: Bloomberg, Edison Investment Research

We put the general malaise down to a number of factors including lack of trading opportunities, with oil staying steadfastly in a tight range, a flight to better-performing equity classes outside of the wider resource sector, a distinct lack of M&A activity and below-average exploration activity, both in terms of quantity of wells drilled and success rate.

Markets becoming increasingly sceptical

Looking at this through another and longer-term lens, Exhibit 2 illustrates the ups and downs of market perception over the last nine years. Here we track the average discount/premium that markets are willing to price in vs consensus analyst target prices.

Exhibit 2: Discount of share price to analyst consensus

Source: Bloomberg, Edison Investment Research

The markets have been increasingly less willing to attribute the valuations given to companies by analysts. We are mindful that there are a number of reasons for more optimistic valuations vs analyst target prices in the past, including a sharply increasing oil price from the early 2000s to the start of the financial crisis and buoyant stock markets in general. However, the group now averages a 40% discount to consensus analyst valuations, its lowest level over the period (excluding the immediate aftermath of the financial crisis).

Many investors have been burned by recent high-profile misses (eg Chariot, Bowleven, HRT, OGX) and an ever-increasing cost base tied to a static oil price has contributed to the lack of optimism we think.

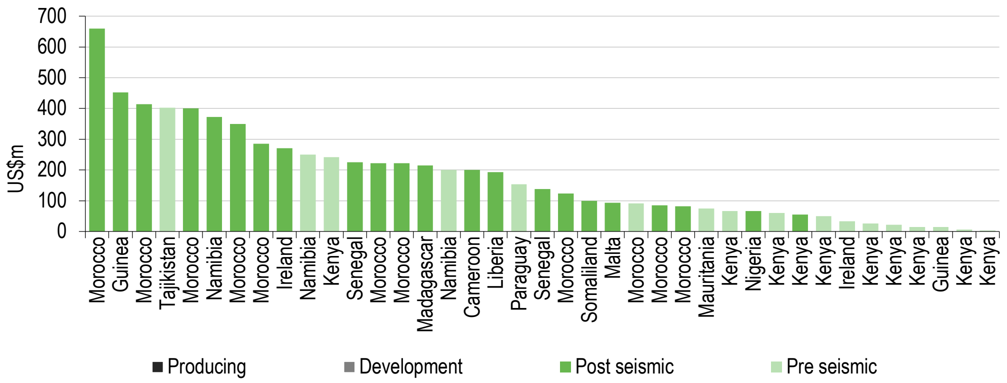
However, in any environment, we still believe there to be stocks out there that are attractive investments, and there are likely stocks in the small-cap E&P space that represent good value.

Enterprise value vs industry farm-in deals executed

Irrespective of stock market sentiment, industry has continued to execute deals to sew up acreage and opportunities throughout the last few years, as more and more of the available land in Africa is licensed. As is clear from Exhibit 3, the gross block value implied by these farm-outs varies widely. We ascribe these differences to factors such as maturity of oil province, prospectivity and fiscal terms.

Looking at recent farm-outs, it is clear that many companies are enthusiastic about Morocco. The early stage of much exploration in Kenya (onshore) is also evident by the relatively low valuations put on those blocks.

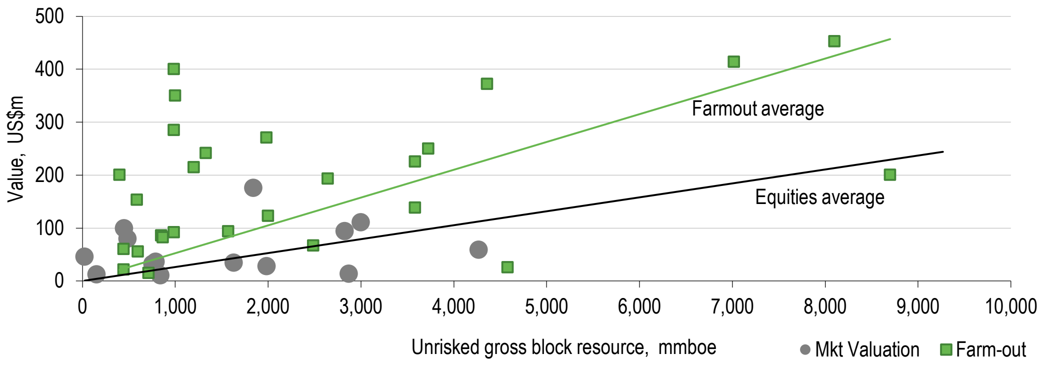
Exhibit 3: Gross value of exploration blocks (implied by industry farm-outs)



Source: Edison Investment Research, Bloomberg, assorted company information

A more valuable analysis, however, is to compare the price industry is willing to pay for exploration acreage vs the stock market. In the case of equities, this analysis can only be applied to ‘pure plays’ where most or all the company’s enterprise value can be attributed to one single asset or licence interest.

Exhibit 4: Industry farm-out values vs current E&P stock valuation

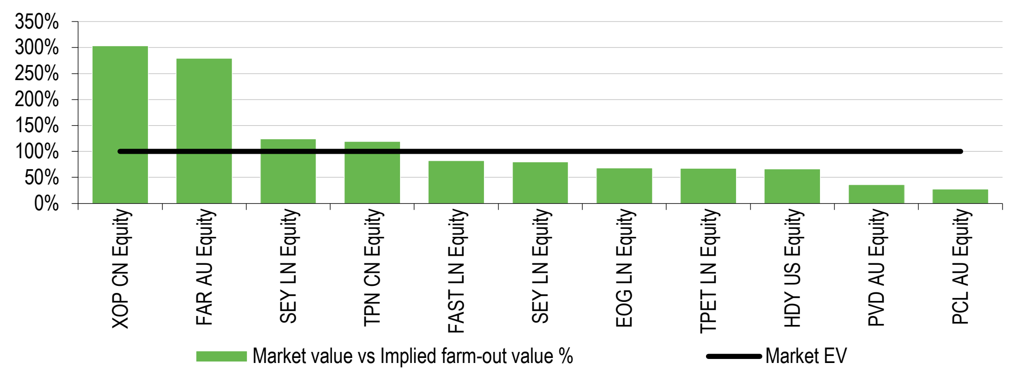


Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

Our analysis comparing farm-out values to E&P stock valuations (Exhibit 4) clearly shows an ongoing marked disconnect between industry and stock market valuations with equities trading at around a 60% discount to the prices historically being paid by industry. However, this gap is narrower than what we have seen in previous months (we have been tracking this kind of analysis now over more than a year) as the stock market has improved.

Breaking this down by company we can see that the majority of companies trade below the industry value (Exhibit 5). The exceptions to this are FAR Ltd and COPL (XOP CN). In the case of FAR this is because the company has not completed farm-out deals on all its acreage, while for COPL the market is possibly applying a premium to the company that reflects the strength of its partner, the supermajor ExxonMobil on Block LB-13 in Liberia.

Exhibit 5: Current EV as a percentage of the industry farm-out value



Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

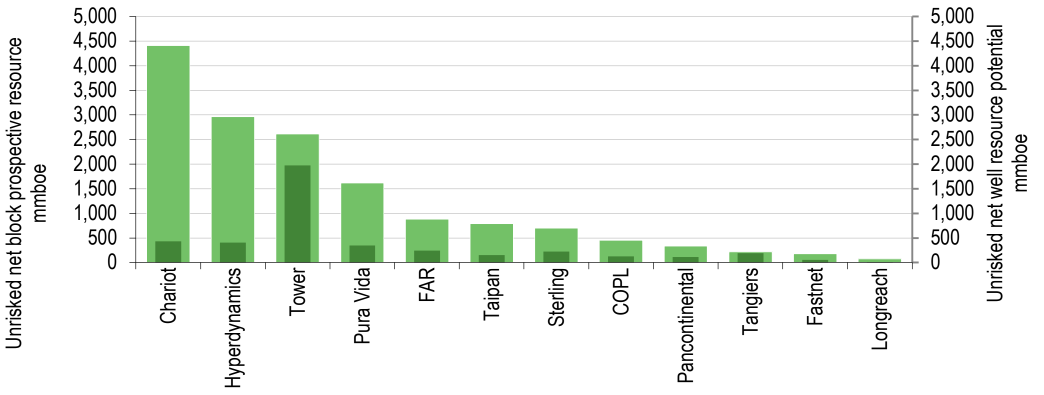
2014 drilling activity: A wealth of opportunities

Having executed a swathe of farm-out deals during 2012 and 2013, a host of independent E&Ps are now ready to get drilling. We now consider the opportunities the upcoming wells offer investors in both larger and smaller independents.

Overall volumes; tens of billions of barrels being explored for

The next 12 months is a very significant time for our universe of Africa-focused independent E&Ps, with wells targeting over 27bnboe and potentially opening block resources of over 70bnboe. Tower/ Repsol's Welwitschia-1 well is the largest in terms of resource being targeted (9.9bnboe gross, 2bnboe net to Tower assuming an additional 10% farm-down), but equally as important is the 'running room' that these potential play opening wells can deliver, ie the difference between the initial well resource potential and the declared full block resource potential (Exhibit 6). In the case of Chariot Oil & Gas, Hyperdynamics and Pura Vida, the upcoming wells have the potential to open up in excess of 1bnboe of resource net to each of these companies.

Exhibit 6: Net unrisked block opening potential against gross well prospects being targeted in 2014



Source: Edison Investment Research, Bloomberg, assorted company information
Note: In some cases, we have used/assumed the P10 figures as a rough proxy for block resources – this is probably underplaying the potential for many companies.

Of course, while these resource sizes are material, drilling is not without very significant risk. Previous years have seen a number of high-profile/high-impact wells being drilled, with Namibian drilling by Chariot/BP/Petrobras and HRT/GALP all unable to confirm commercial hydrocarbons. Cairn's recent Foum Draa prospect, the first of many to be drilled in Morocco in 2014, was declared dry in January 2014.

It is also worth bearing in mind that many of the figures above are potentially underplaying the de-risking in the event of success. Some companies tend to list only prospects, omitting leads that may come into play after a drill result, while others offer little or no information on the upside block potential beyond an existing well target. In such cases we assume the P10 figure for the well represents the block resource potential but this could indeed be highly conservative.

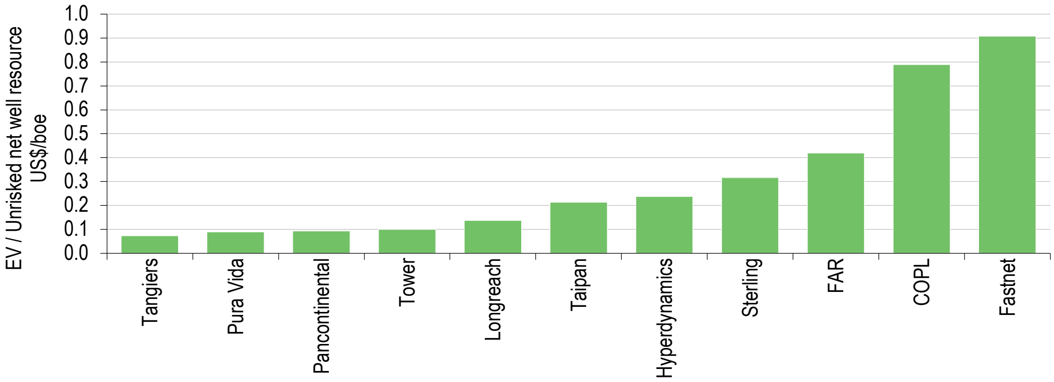
Above all, we stress that while any success will de-risk other wells, releasing value from these will require time and, importantly, capital.

Screening on a simple resource basis

The next screen we consider for the 2014 wells is the resource potential being targeted by each company as a function of its market valuation. EV/mmboe is a common measure in the industry and not surprisingly we see a wide range of different values being ascribed by the market for the various drill opportunities on offer.

At the 'bargain' end of the market we see that three of the four companies with exceptionally low EV/boe metrics are ASX-listed juniors (with only Tower offering similar value of the UK-listed stocks, courtesy of the very large resource potential of the Welwitschia-1 well).

Exhibit 7: EV/boe (unrisked) based exclusively on 2014 well targets

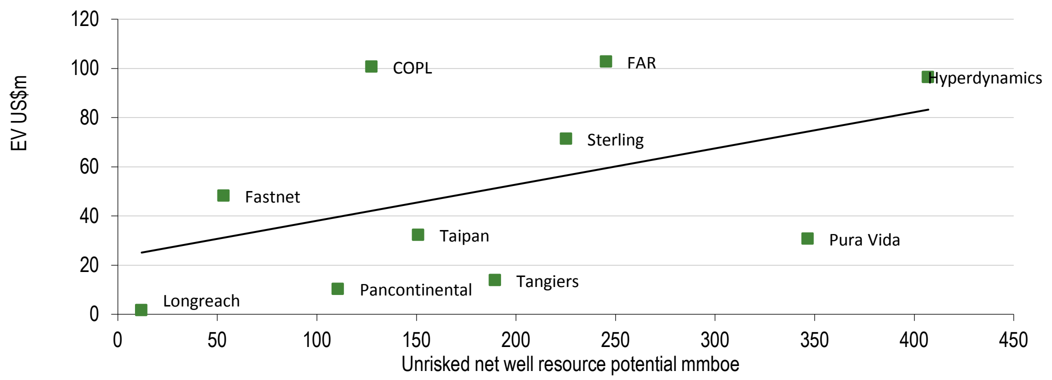


Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014

Breaking this into the component EV and unrisked resource numbers allows us to see the size of the prize on offer for each company. With the exception of Tower (as an outlier) the other standout name using this analysis is Pura Vida, which offers substantial resource potential at a relatively low current EV. Hyperdynamics offers even greater resource potential but with Tullow as a partner the market may already be pricing in a premium for the operator. This would also be a reasonable assumption for both COPL and Fastnet who partner ExxonMobil and Kosmos Energy respectively.

However, in all cases we caveat this analysis with a major health warning, not least because we are dealing here with unrisked resource potential.

Exhibit 8: Net hydrocarbons targeted vs current EV



Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014. Note: **Tower Resources** has been removed from this for scaling reasons. It is seeking 2.0bnboe net resources and has an EV of $150m (we assume a pre-drill WI of 20% for Tower). We also assume farm-downs for FAR on Kenya Block L9 (current 30% WI) and Taipan Block 1 (currently 20% WI) in order to fund drilling.

Risked value per share per well

The barrels sought is but the first part of the puzzle. To better understand the potential value of the barrels being targeted we next introduce two further filters, geological risking and fiscal terms.

Where available we have taken the geological chance of success reported by either the company or from independent competent person's reports (CPRs). For the wells being targeted by junior E&Ps in 2014 we see (or assume) geological chances of success (GCos) ranging between c 30%

for well-defined structural plays and/or where supported by well control all the way down to less than 10% where there is significant geological uncertainty and little or no supporting well data.

The value of any discovery is also highly dependent on the fiscal regime applied to prospective post-discovery developments. In order to get a rough approximation of comparative value for the prospects being drilled in 2014, we have applied the differing fiscal regimes for each country across a standardised development to arrive at an indicative NPV $/boe value.

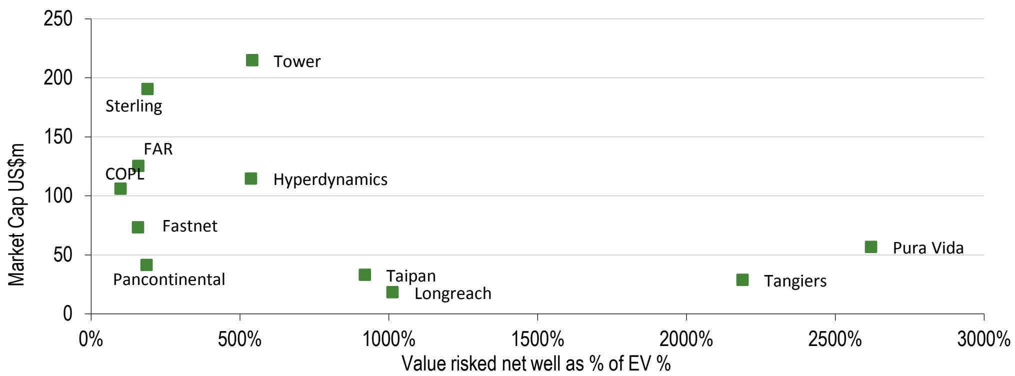
In our illustrative offshore development, we assume a 200mmboe field (75% oil) with first oil in 2019. Capex is assumed to be $20/bbl and opex $10/boe. Our onshore development is a 100mmboe field developed with $12/boe capex and $10/boe opex. Our long-term oil price is $80 real (escalated at 2.5%) after a fade from current levels. We apply a uniform 12.5% discount rate across the peer group.

We concede this generalised approach could undervalue larger discoveries, those in more benign operating environments or those finding pure oil. On the other hand, first production in 2019 from deep, complex projects could well turn out to be optimistic in the fullness of time.

Given the substantial uncertainties pre-drill, any modelling at this stage is essentially indicative and can only serve as a guide to relative value across fiscal regimes. Moroccan fiscal terms (7% royalty, 35% income tax and 10-year tax holiday) are more attractive than Namibia's (similar terms, but no holiday), which in turn is more attractive than Liberia's PSC environment, though both are far more sensitive to movements in costs. This simplified approach has obvious limitations, but should capture a notable percentage of differences, especially given the large number of wells being drilled. However, the very wide range of well sizes (18mmboe to 9.9bnboe) means that prospect-by-prospect modelling is impractical at this stage, and will contribute only limited extra information pre-drill.

Adding both risking for GCoS and overlaying the relative value of wells based on our country-by-country DCFs, we arrive at estimated upsides to the current EV for each company based on 2014 drilling (Exhibit 9). This shows some clear value plays.

Exhibit 9: Net risked value as percentage of current EV vs current market cap



Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

Based on our risked analysis, it is clear that Pura Vida and Tangiers have the largest upside (courtesy of attractive Moroccan fiscal terms), with Pura Vida, the larger and more liquid of the two. The market may also be attributing concerns around Tangiers following recent boardroom changes and uncertainty over the company's takeover of Jacka Resources. Elsewhere, Taipan's small size and lack of liquidity may deter some, but the value potential is unquestionable.

Using this approach, ultimately investors need to trade off two competing criteria: EV upside accessible through the drillbit versus liquidity and an ability to realise gains in the event of drilling success. Using this screen we consider two companies in particular that reflect compelling reasons to invest:

- **Tower's** 9.9bnboe Welwitschia-1 prospect (being drilled by Repsol in Q214) is by far the largest prospect being drilled by this peer group, and has consequently very significant value to Tower given its 20% WI (we assume it has to farm-out 10% of the current 30% to fund the well).
- We note that **Pura Vida** and Hyperdynamics are very similar in many respects at this stage. Both are drilling large prospects (gross 1.1bnboe and 1.5bnboe respectively), while Hyperdynamics' larger working interest (37% vs 23%) is balanced from a risked level by a lower geological chance of success (17% vs 31% respectively). Both are carried through an exploration and potential appraisal well by much larger companies (Tullow for Hyperdynamics and Freeport for Pura Vida). That Hyperdynamics has a larger EV at this stage is the main reason for Pura Vida's more attractive upside.

Looking beyond 2014

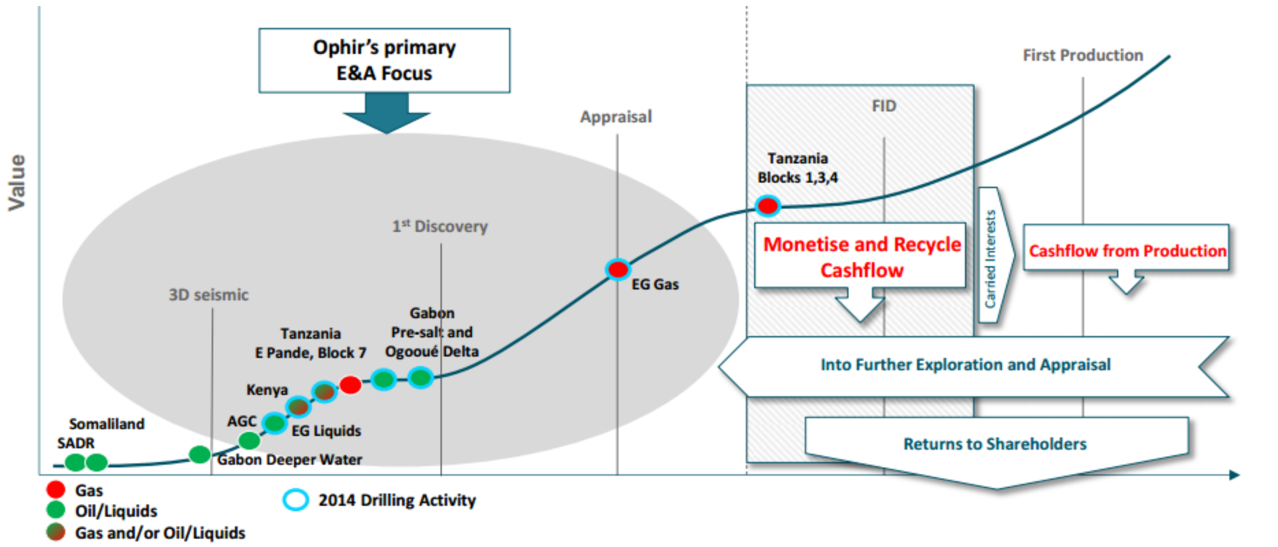
While most of the smaller independent E&Ps have secured well carries for their 2014 drilling activities, beyond the current programme there are significant funding questions for many.

At Tullow's recent 2013 results presentation, the company was at pains to highlight what the market is acutely aware of, namely that deepwater exploration is becoming increasingly expensive. If a company of the size and reputation of Tullow, with its opportunity set, is starting to prioritise onshore over offshore because of spiralling costs (a typical Jubilee well costs $50m, while similar deepwater wells can now cost over $100m), the ability of smaller players to go full cycle is, in our view, bleak. However, this does not mean that investors cannot profit; we just believe that the industry and financial markets point to early, flagged exits for any discoveries (at least in the near term when costs remain high).

How and when to monetise?

A chart from Ophir is instructive. The steepest value increases come in three waves: (1) after 2D/3D seismic, (2) after first discovery and (3) when moving from FID to first production. The costs involved in these increase markedly at each stage. Seismic can cost millions of dollars, while a deepwater offshore well could easily cost $100m, with testing and development running into billions.

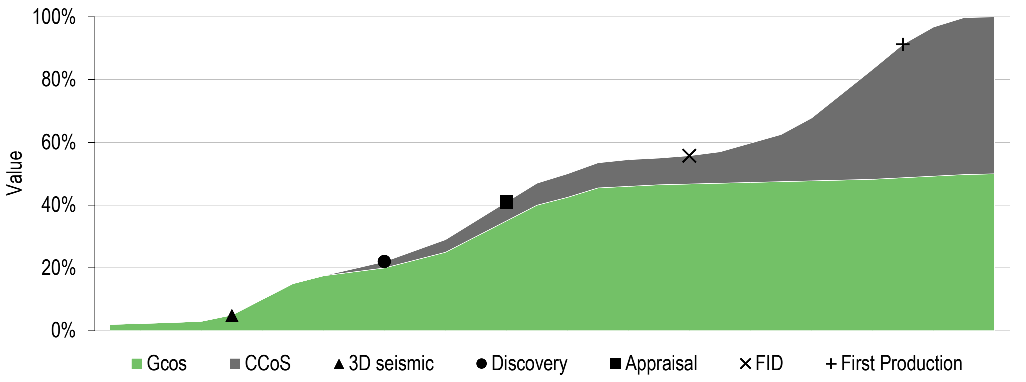
Exhibit 10: Evolution of value



Source: Ophir

We can break up the Ophir chart to into two components, GCoS (geological chance of success) and CCoS (commercial/technical chance of success), with the gains in GCoS requiring relatively little capital vs the very capital intensive development programme (increasing CCoS). As a result, we can see that they can effectively realise perhaps 30-40% of the value of a particular field with a discovery/appraisal programme by unlocking the majority of the GCoS while leaving the heavy lifting/capital expenditure to others.

Exhibit 11: Components of value creation

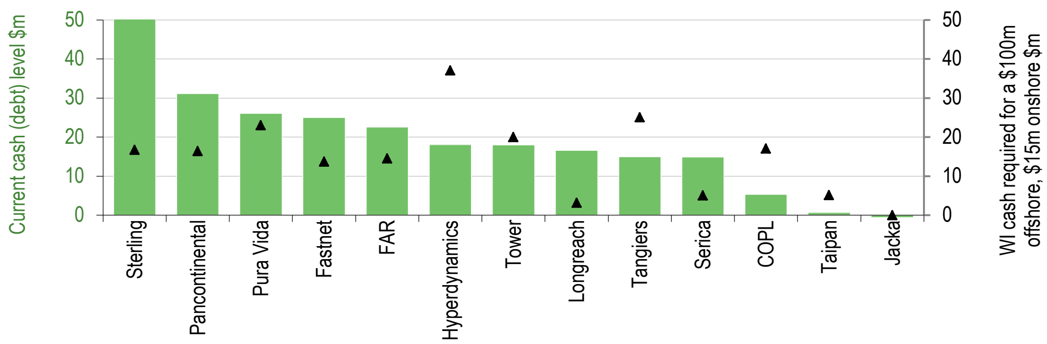


Source: Edison Investment Research, adapted from Ophir

Under half the companies we examine in this report have little or no current organic ability to fund a further appraisal well programme if called to, though some are carried for a follow-up appraisal well (Exhibit 12). Importantly, Pura Vida, COPL and Fastnet all have two well carries, differentiating them from others with only one well carry (though Hyperdynamics would be funded on a contingent appraisal if the exploration well is successful). Pura Vida and Fastnet in particular are in a strong position with $100m/well gross carries (on average) for each well, unlike some other carried juniors (eg Tangiers $33.5m one well carry) where the carrying amount may not cover the full costs of the drill programme.

In the case of those with substantial well carries, the need to come back to the markets will therefore be much less critical, at least in the near term. We stress, however, that these follow-up wells have not been included in the analysis as the wells are not yet fully fixed in timing, all would be complex and expensive wells and we therefore assume may be delayed until all post-exploration analysis can be completed. We assume therefore they are drilled in 2015 and are outside this analysis.

Exhibit 12: Very few of the companies can afford to drill another well without external financing



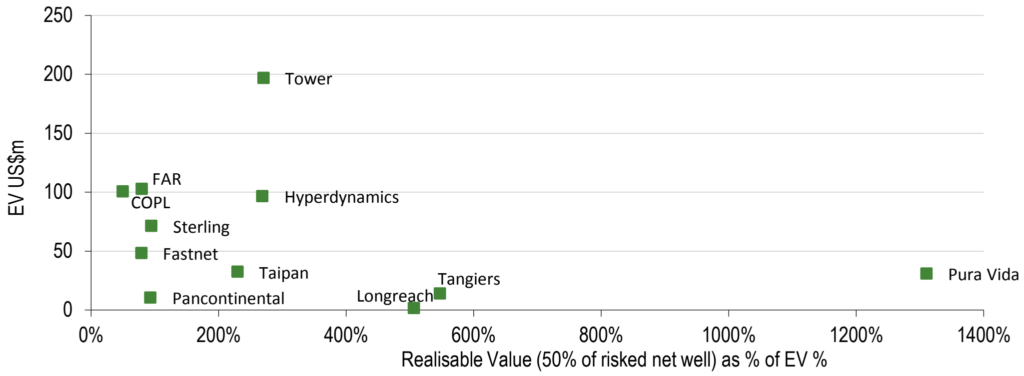
Source: Edison Investment Research, Bloomberg, assorted company information. Note: Sterling holds $119m in cash – we have restricted the axis for ease. We have excluded Genel, Cairn and Ophir, which are much larger and can fund further drilling. We assume here that Tower farms-out 10% of its 30% to fund its share of the first exploration well. We also assume farm-downs for FAR on Kenya Block L9 (current 30% WI) and Taipan Block 1 (currently 20% WI) to fund drilling.

Whatever the result of exploration, many of the companies will have to raise further capital to either appraise/develop the fields or to potentially fund a restart in exploration cycle in other properties. This will therefore lead to raising of capital through asset-interest farm-downs and/or equity raises, as seen in the Ophir model over recent years. The other option is to sell the asset/company entirely at this point, as per the Cove Energy model.

Realisable value upside

Given our previous logic that companies could well look to exit after a discovery or appraisal programme, we would assert that they may be able to achieve perhaps 50% of the eventual value of the asset (if that). As a result we can look at the upside potential to EV should the CoS for the wells increase to 50% (which we denote as realisable exploration value or realisable value in the case of clear exploration/appraisal success). Overlaying this onto the pre-drill GCoS gives us a view today (Exhibit 13) of how we could conceivably look at the risked potential valuation of each of our companies if they can open up new basin plays.

Exhibit 13: Realisable exploration value vs current EV



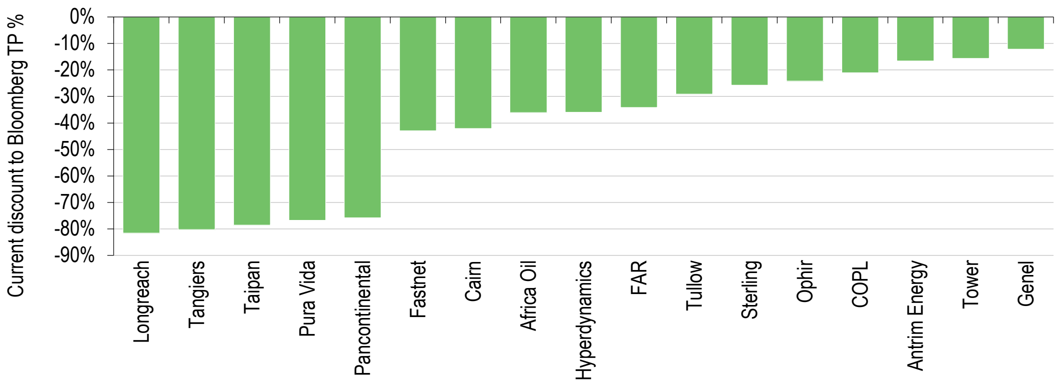
Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

Not surprisingly, all the companies involved have material upside value in their 2014 exploration programme. However, the amount of upside does vary across stocks, with Pura Vida the most clear-cut value proposition. Also of interest using this approach are Tower and Hyperdynamics (with significant resource positions), and Tangiers and Longreach (both probably due to particularly low EVs for the target resources).

Share price vs analyst consensus target price

While we have applied approximate valuations to 2014 prospective discoveries, we do not formally cover all the companies featured in this report. As a result, we look to consensus target prices for further indication of value, recognising that there is naturally a wide range of quality and approaches across the analyst universe when it comes to assessing exploration potential upside.

Exhibit 14: Discount of share price to Bloomberg consensus target price



Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

Not surprisingly this analysis (Exhibit 14) highlights the greatest disconnect to target price for the smallest and least liquid stocks. Also, not surprisingly given our view on potential realisable value through exploration, Pura Vida, Tangiers, Taipan and Longreach again feature prominently as value plays. Larger companies that include a substantial level of either production or development assets are naturally not as heavily discounted as investors more readily ascribe near-full value to cash-generating activities.

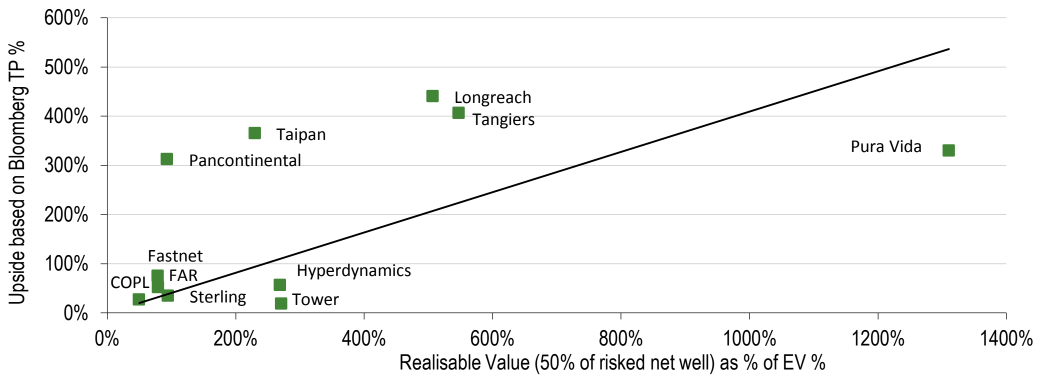
Readers should note that in pulling together this part of our analysis we find no relationship between the number of analysts that cover companies and the discount the market applies to their collective consensus valuations.

Potential anomalies/value opportunities

If our approach and that of other analysts are roughly comparable, we would expect those companies with the largest exploration upside to have the greatest disparity between share price and consensus valuations (we implicitly assume the production/development NAV is far less discounted). This turns out not to be the case, and a number of anomalies crop up (Exhibit 15).

- Stocks below the line represent where either analyst target prices are potentially overly conservative or where our assumptions/risking is too aggressive, bearing in mind that we are largely at the mercy of companies to source and provide realistic guidance both on CoS and resource potential for the wells that are being targeted. Pura Vida is the standout name here indicating it may be potentially undervalued by the analyst community versus the peer group. Tower is also in this category, possibly due to funding concerns (Tower needs to secure a farm-out to fund its share of Welwitschia-1 well costs) despite the impressive resources being targeted.
- Stocks above the line indicate greater value attribution by the analyst community than may be reflected in the well data. We are not surprised to see companies with strong partners and committed follow-up wells such as Fastnet and COPL in this category, although even in the case of these companies there remains significant upside both in terms of consensus target price and realisable exploration value.

Exhibit 15: Realisable value as % of EV vs share price upside to target price



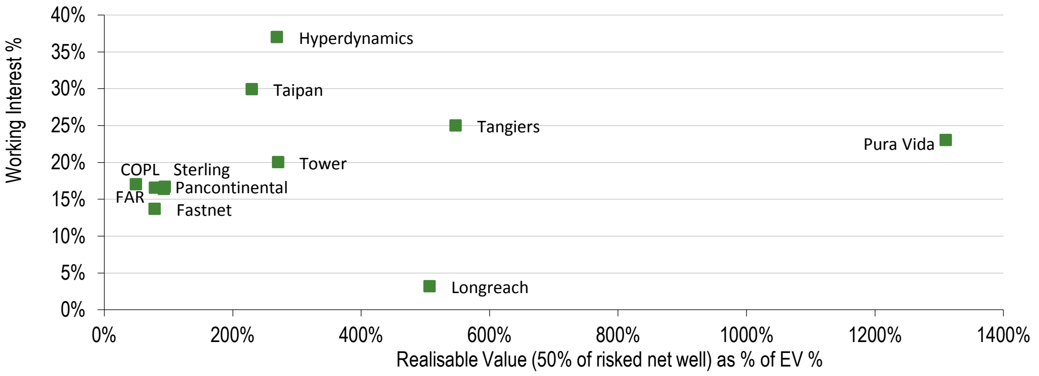
Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

‘Running room’

Our final analysis considers the working interest companies will be holding post exploration drilling in 2014. This is important to consider the room each of the independent E&Ps will have to further fund drill activities through farm-outs without incurring excessive equity dilution. As mentioned earlier this is particularly important for those with an offshore focus.

Not surprisingly, Hyperdynamics is the standout name here in terms of having significant running room beyond its two-well carry (exploration plus follow-up appraisal), with Tullow having retained a 37.5% interest.

Exhibit 16: Realisable value as % of EV vs residual equity post exploration drilling



Source: Edison Investment Research, Bloomberg, assorted company information, data priced at 27 Feb 2014.

Company activities over the next 12 months

The following details summarise the drilling activities of the smaller independent E&Ps analysed in this report. The details only cover expected drilling activity over the next year.

Canadian Overseas Petroleum (XOP CN)

Canadian Overseas Petroleum or COPL (market cap C$118m*) has a 17% interest in the LB-13 block in Liberia, where it is planning two wells. The Liberian basin lies adjacent to Sierra Leone where a number of significant discoveries have been made. The first discovery in offshore Liberia was made by African Petroleum in February 2012 on the Narnia-1 prospect.

COPL's partner in LB-13 is Exxon (83% interest). No estimates have been released by the company as yet, but we assume the first offshore well will target 500mmboe initially with a possible second well/sidetrack (we assume 250mmboe), though we are aware this could be under-estimating the volumes. Should the well be successful, it could help to de-risk multiple further leads/prospects, currently estimated (by CPR) to be in excess of 2.6bnboe (gross) across the block.

COPL's technical team has extensive experience with advanced seismic AVO analysis to differentiate oil from water in stratigraphic turbidite fan systems and channel prospects. The technology essentially involves a sophisticated manipulation of existing AVO analysis known as extended elastic impedance (EEI). This has been applied across its Liberian acreage, enabling it to secure a farm-out deal with a strong partner, Exxon. The prospects lie in the Turonian to Intra-Campanian channel/fan complex in stratigraphic turbidite fan structures, and lie adjacent to the mooted discovery by Chevron at Camine Deep-1. COPL is carried for its work programme up to a cap of $120m (gross), which we assume covers two wells. We assume a geological chance of success of 23%, as per the 2012 CPR. The first well is targeted to spud in H114.

Chariot Oil and Gas (CHAR LN)

Chariot (market cap £41m*) has interests in two licence areas that may be drilled in 2014. Chariot management is working towards the prospects being drill ready, but has yet to farm-down the interests in order to fund drilling. In Mauritania, it shares an interest in C-19 with Cairn Energy. The August 2013 farm-down notice gave Cairn a 35% WI in the block in return for seismic back costs, leaving Chariot unfunded for its portion of any future well (in which it would have to fund 61.11% of costs). We therefore assume a further 20% sell-down to fund an assumed $100m well. The block contains multiple 500mmboe+ targets according to Chariot, while Cairn puts the well potential at over 1.25bnboe (made up of stratigraphic and structural targets of 981mmboe and 273mmboe respectively).

The second contingent well is in Namibia, where Chariot is looking to farm-down its 90% interest in the central blocks to fund a well. The result of the Tower/Repsol well could have an impact on Namibian sentiment, though it is in the Northern area so lies in a different basin. Chariot's figures indicate gross unrisked resources at over 6.6bnboe in the block, though Prospect B, currently being highlighted by the company, is 469mmboe (gross) with a GCoS of 22%.

We assume Chariot will farm-down around 35% of the block to fund the well in this report.

FAR Ltd (FAR AU)

FAR (market cap A$140m*) holds a 15% interest in the Sangomar Deep licence offshore Senegal. Its partners are Cairn (65%) and ConocoPhillips (10%). The first well that FAR will be targeting is a deepwater fan prospect with c 900mmbbls unrisked mean prospective resources identified.

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* Market capitalisations priced at 27 February 2014.

ConocoPhillips is funding FAR's share of the well costs in return for its 10% interest in the block. The well is due to spud in March 2014.FAR’s second well target in Senegal in 2014 will be the L-prospect, with c 550mmbbls unrisked mean prospective resources identified. Cairn is funding FAR's share of the well costs in return for its 65% interest in the block (the deal was struck prior to the ConocoPhillips deal hence the different terms). The well is due to spud in May 2014.

In addition to Senegal, FAR holds a 30% interest in Block L9 deepwater offshore Kenya alongside Ophir Energy (60% and operator) and Vanoil (10%) – pending government approvals. FAR is farming into the block and hence is paying $11m to Ophir for back costs. FAR is looking to farm-out part of its interest in the block ahead of drilling that is anticipated in Q414. Ophir has identified a number of leads on the block including Tana with potential of c 190mmboe and a 15% CoS.

Fastnet Oil & Gas (FAST LN)

Alongside Atlantic Margin specialist Kosmos Energy, **Fastnet** (market cap £44m*) is one of the original licence holders in the Foum Assaka licence offshore Morocco. Having already farmed-out an 18.75% interest to Kosmos for 3D seismic, in December 2013 Fastnet further farmed out a 9.375% interest in the block to SK Innovation in return for a two-well carry. This leaves Fastnet with a 9.375% interest alongside SK Innovation, Kosmos (29.925%), ONHYM (25%) and BP (26.325%), which farmed into Kosmos's position in late 2013 (along with two neighbouring blocks). The primary target at Foum Assaka are lower Cretaceous reservoirs and the first well, FA-1, will target these reservoirs, for which the operator Kosmos indicates potential Pmean resources of 360mmboe in the Eagle Prospect. The well has multiple secondary objectives from the Tertiary to the top of the Jurassic. Results from the well will help determine the next drilling objective on the licence, for which Fastnet is also potentially carried by SK, at its discretion in the case of an exploration well, up to a cap of $100m. Specific gross block resources following the processing and interpretation of the 2012 3D seismic are not in the public domain. However, Kosmos’s latest website presentation (February 2014) confirms multiple prospects have been defined for drilling in its Agadir Basin acreage with prospect sizes ranging up to 500mmboe plus. An earlier CPR for Pathfinder Hydrocarbon Ventures Limited for one of the shallower Tertiary prospects estimated prospective resources of 990mmboe gross. The Maersk Discover rig has been contracted to drill FA-1 with the well due to spud in March 2014 and likely to take up to three months to reach TD.

Fastnet also has an option to take a 37.5% net interest in the onshore Moroccan Tendrara Lakbir block by initially fully funding one appraisal well. Assuming the well is drilled, Fastnet's partners will be Moroccan E&P OGIF (37.5%) and state oil company ONHYM (25%). A test of the Triassic TE-5/Lakbir structure is the preferred drill target for a well in 2014 with commercial success likely to be defined by a sustained flow rate of at least 4mmscf/d. A CPR based on existing 3D seismic and a successful extended well test in 2008 estimated 311bcf of best estimate contingent resources, although this is only based on a part of the previously drilled TE-5 structure. Independent consultant SLR estimates the best estimate GCoS of the planned well on Tendrara at 22%, reflecting the requirement to de-risk the reservoir by proving commercial gas flow rates.

Hyperdynamics (HDY US)

Hyperdynamics (market cap US$114m*) holds a 37% interest in the Fatala well in Guinea (operator Tullow 40%, Dana 23%). The offshore well is targeting deepwater turbidites, which inhabit the block and provide “very significant follow-up prospectivity recognised to the east”. Estimates of prospectivity vary across the partners; Hyperdynamics’ presentation suggests 1,00mmboe, while Tullow data put the gross mean resource for Fatala at 259mmboe. In our analysis, we have used the Hyperdynamics number to be consistent across our analysis.

A previous well completed in February 2012 (Sabu-1) targeted a four-way anticline in 700m water depth and did not intercept commercial hydrocarbons, but HDY noted that the well demonstrated the presence of “a petroleum system”. Tullow subsequently farmed-in to the block in December 2012, acquiring a 40% interest and operatorship in return for a total carry of HDY of up to $101m ($27m cash, a capped carry on the next exploration well [capped at $100m gross costs] and [if deemed appropriate] an appraisal well).

The well is a more demanding well then Sabu-1. The water depth is 2,895m (vs 700m) while TD is estimated to be 2,000m. We assume a geological chance of success of 17% as per Hyperdynamics guidance. We note that a potential follow-up prospect (Sylli) has both a higher CoS and larger resources than Fatala, and Hyperdynamics lists two further fan prospects that could be added in time. The well should spud in Q214.

Hyperdynamics is currently involved in two investigations, both of which could be a risk to value in the long term. The DoJ and SEC are investigating potential violations of the Foreign Corrupt Practices Act (FCPA) and anti-money laundering statutes. If an action is commenced or HDY is found to have violated the FCPA or other legal requirements, it could lead to reduction in shareholder value. In the meantime, these have increased costs to the company, which increases cash burn. The Q413 SG&A expense was $8.3m.

Longreach Oil & Gas (LOI CN)

Longreach (market cap C$20m*) has a 50% interest and is operator of the Sidi Moktar licence alongside partners MPE (25%) and ONHYM (25%). The licence covers three blocks that together surround the producing Meskala gas field. Following the inconclusive Koba-1 well, which encountered 45m of gas charged reservoir (349bcf pre-drill prospective resources), Longreach is targeting the 78bcf Kamar structure. Drilling is expected to start in Q114, with an independent GCoS estimate of 18%.

Pancontinental Oil & Gas (PCL AU)

Pancontinental (market cap A$46m) is potentially targeting two wells offshore Kenya during 2014. The first of these, the Sunbird-1 well, is currently drilling on Block L10A and is expected to reach TD around mid-March. Pancontinental holds an 18.75% interest alongside BG Group (Operator 50%) and PTTEP (31.25%). Sunbird is the first ever Miocene Pinnacle Reef drilled in East Africa and such is genuinely a potential play opener both for the consortia as well as the wider East Africa exploration community.

In addition to Sunbird, a number of other prospects have been mapped for possible drilling. These include clastic channel and other sandstone prospects in both L10A and in the adjacent L10B block where Pancontinental has a 15% interest (BG operator with 45%). In the western sector of L10A/ L10B the very large Crombec Lead continues to be mapped. Crombec is a large faulted anticline covering 550 sq km, with vertical relief of about 400m. We expect Pancontinental and its partners to target at least one further well on L10A/ L10B during 2014 and include this in our analysis.

Pura Vida (PVD AU)

Pura Vida (market cap A$63m*) has a 23% interest in the Mazagan block in Morocco where it is partnering with operator Freeport McMoRan Oil & Gas (52%) along with state oil company ONHYM (25%). Freeport is carrying PVD for two wells on the block, the first targeting the Toubkal prospect that has been independently assessed at 1.5bnbbl mean recoverable prospective resources. Toubkal is a middle Miocene target with the Mazagan block containing a number of further Miocene leads and targets that are unique among the offshore Moroccan wells, although the block also contains Lower Cretaceous and Jurassic targets within its 3D surveyed area. Third-party assessors have estimated a particularly encouraging CoS of 31% for Toubkal. On 3 March 2014, PVD announced a rig share agreement with Kosmos for the Atwood Achiever deepwater drillship. The first of these slots will be used to drill Toubkal-1 and is expected to commence in January 2015.

Importantly, Pura Vida has a carry for its costs (capped at $215m) for its two wells. This is unusual vs the peer group, as many only have a carry for one well (or in the case of COPL and Fastnet, two wells). The need to come back to the markets will therefore be much less stressed for these companies.

Beyond Morocco, Pura Vida also has licence interests offshore both Gabon (another industry hotspot at the moment) and Madagascar. In Gabon the company is working towards plans to drill on its Nkembe block, probably in 2015 or 2016, while with new partner, Sterling Energy, the company is targeting the Sifaka-1 well on the Ambilobe block, probably during 2015. Given both these activities are beyond 2014 we do not include them in this analysis.

Sterling Energy (SEY LN)

Sterling (market cap £114m*) has a 50% interest in the Bamboo well in Cameroon. The Bamboo well was spudded on 9 February and will explore for "very large, vertically stack floor fans" in the upper Cretaceous. Sterling is fully carried for its share of costs in the well by Murphy, which also owns an interest in a neighbouring block and drilled an unsuccessful well in 2013. Bamboo is a large prospect – Sterling estimates 450mmboe (predominantly oil), but Murphy estimates 600mmboe and there are a number of follow-up leads. No estimates have been released on geological chance of success; we assume 20% here. The well should take 60-70 days, so results should be known in mid-April.

We also note that Sterling holds a 30% partially carried well working interest offshore Madagascar with partner Exxon (70%, operator). The Sifaka prospect has a gross best estimate recoverable resource of 1.2bnboe and may be drilled in 2015-16. As a result, we exclude it from our analysis at this time.

Taipan Resources (TPN CN)

Taipan (market cap C$37m*) has interests in two wells being drilled in 2014.

The first is a 30% interest in the Pearl-1 well in Block 2B onshore Kenya. Pearl will target 251mmboe according to Sproule and should spud in Q314 at a cost of between $18-25m according to Taipan, though it is carried up to a cap of (gross) $29.5m. The company puts the GCoS at 30%. Importantly, a February CPR by Sproule has placed an estimate of gross unrisked mean resource in the block of 1,593mmboe, providing very significant upside should exploration at Pearl be successful. We note that Africa Oil is currently preparing to drill the 400mmboe Sala-1 prospect in neighbouring Block 9 with Marathon. Results should be known by mid-April.

The Khorof well, operated by Afren in Block 1, is estimated to hold 380mmboe, of which Taipan currently holds 20%. Taipan is not carried for this well, as it performed a farm-out with Afren for seismic costs. It will therefore have to fund its share of the drilling costs. For the purposes of this report, we assume that it executes a farm-down on broadly similar terms to its PMO farm-out in Block 2B. We therefore believe Taipan will sell down 8-10% to fully carry its $5m (estimated) drilling costs. Given its financial situation, we assume it is not in a great negotiating position, so assume it will retain a 10% interest. The current plan is to drill the well in Q314.

We caution that Taipan holds very little cash ($750k as at conference call in October 2013) and a further equity issuance to fund ongoing operations is likely in our view.

Tangiers Petroleum (TPT AU, TPET LN)

Tangiers (market cap £17m*) has a 25% interest in the Tarfaya Offshore block in Morocco. In December 2012 the company farmed-in GALP (50%) in return for $7.5m cash of back costs and a gross carry of up to $33.5m on the first well. GALP and Tangiers are targeting Jurassic carbonates and this makes sense given GALP's operating experience with similar geology in both Angola and

Brazil. The first well, TAO-1, is targeting 867mmboe of gross resource (217mmboe net to Tangiers). We expect this to spud in either Q214 or Q314. Tangiers estimates a chance of success of 23%.

Tower Resources (TRP LN)

Tower (market cap £129m*) holds a 30% working interest in the PEL0010 block in offshore Namibia. The Welwitschia-1 well will spud in Q214 and is targeting 9.9bnboe resources (gross) across five horizons, according to Tower. The well will be drilled by Repsol (44%) and will target a large four-way dip closure. The operator benefits from the knowledge gained across a number of unsuccessful wells drilled in Namibia over recent years, not least the Wingat well (HRT), which proved a hydrocarbon system but not commercial hydrocarbons at the well site.

Tower is not fully funded to drill the well, as and such we believe it will farm-down part of its interest to pay for the $80-100m drill costs. Our work indicates that farming down 10% of the interest will fully fund its portion of a $100m well, and this is also the number indicated by Tower. In our analysis therefore we model Tower's interest at 20%.

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