From fragile to agile

Africa oil & gas review

Report on current developments in the oil & gas industry in Africa.
August 2015

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Methodology

The project team based primarily in Cape Town, South Africa, developed a standard questionnaire that was used across PwC's Africa network to conduct interviews with industry players including upstream, midstream, downstream and oilfield service companies, among other industry stakeholders.

Where possible, interviews were conducted in-person so that meaningful conversations could take place regarding responses to the questions. The project team used this information together with the knowledge gained from working with clients throughout the oil & gas value chain and other research we conducted.

Acknowledgements

PwC Africa thanks all of the participants who contributed to this publication by responding to our survey questionnaire. We would also like to say a special thank you to the South African Oil & Gas Alliance who endorsed our survey amongst its members.

Foreword

This review of developments in the African oil & gas industry is our fifth in a series of reviews of the sector.

As with our previous publications in this series, this review represents the valued experience and views of industry players across Africa, including international oil companies operating in Africa, national oil companies, oilfield service companies, independent oil companies and industry commentators, who have provided vital insight into the latest developments impacting the industry in this region.

In this edition, we take a look at what has happened in the last 12 months in the major and emerging African oil & gas markets. As oil prices plunged late in 2014, the industry response has been far-reaching, leading to reductions in headcount and other cost cutting measures. Capital budgets have been cut, and frontier exploration activity has waned. While response to such a drastic move in commodity price was certainly necessary, we have seen that the most successful organisations are taking time to re-set, re-strategise and plan for the upturn in prices, which will inevitably come. Africa should be no exception as many of the frontier exploration plays lie on this continent. At PwC, we have termed this opportunity as moving from 'fragile to agile'.

While the oil price has caused activity to drop, it has also served as a wake-up call to many African governments, which are working hard to pass favourable oil & gas legislation in order to attract investment into the sector. One example of this is Mozambique, which recently passed the LNG Decree Law. In addition, other countries such as Kenya, South Africa and Tanzania have been taking a serious look at legislation currently in place with a view to making it more investor-friendly.

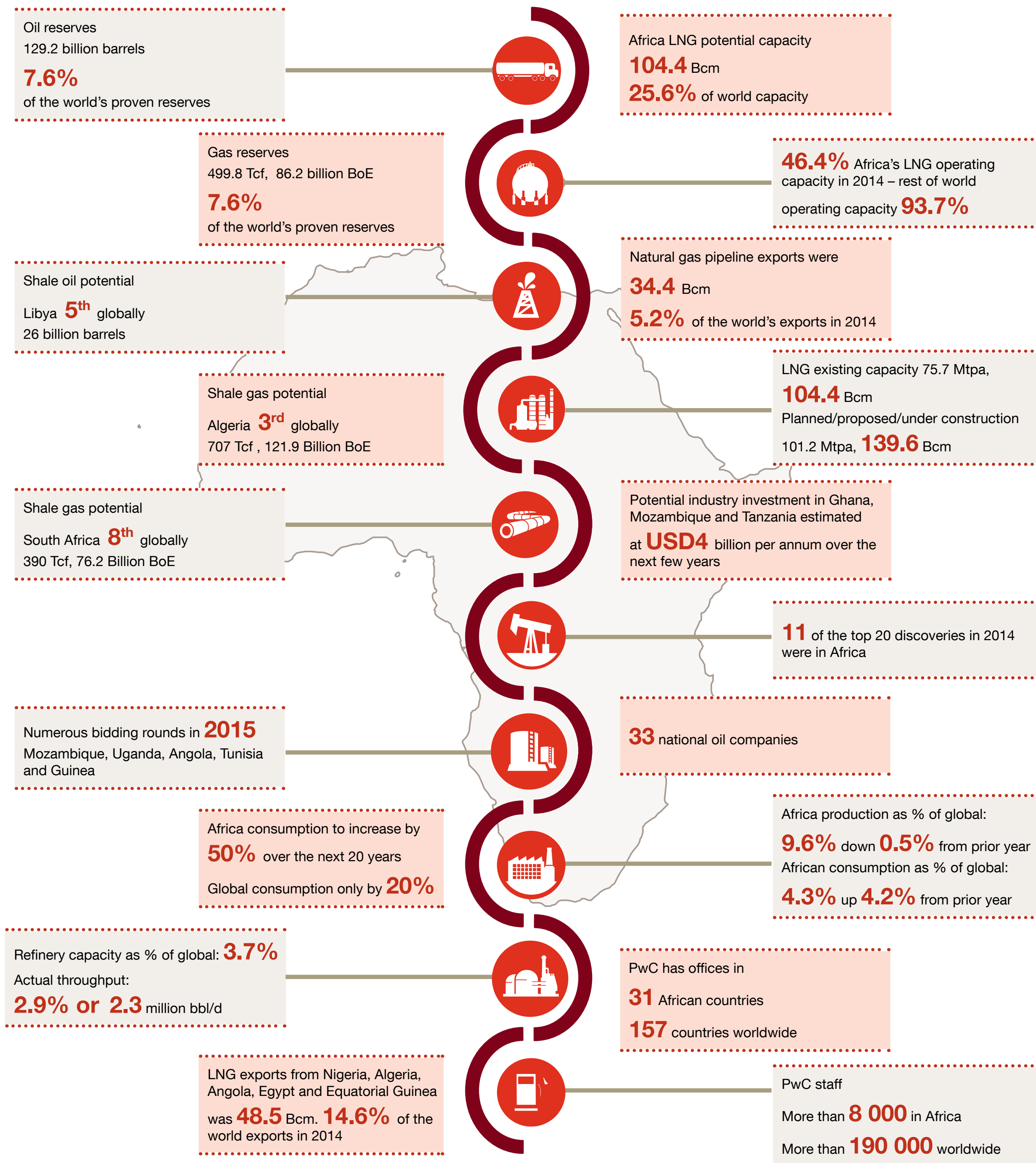
At PwC, we constantly monitor key developments in the industry, analysing the potential impact they will have on our clients and generating solutions to assist companies in managing these ever-changing dynamics. Our industry specialists understand the issues that our clients face and have the experience and expertise needed to proactively address the challenges and recommend sustainable solutions and innovative approaches to emerging issues.

Uyi Akpata
PwC Africa Oil & Gas Industry Leader

Chris Bredenhann
PwC Africa Oil & Gas Advisory Leader

Ayesha Bedwei
PwC Africa Oil & Gas Tax Leader

Oil & gas in Africa



Executive summary

Reserves and production

Africa's share of global oil production has dropped marginally since last year, moving from 10.1% to 9.6% of the world's total. Untapped proven oil reserves on the continent are estimated to be around 8% of the global total, which is nearly the same as the previous year, and these reserves are projected to increase as appraisal of new discoveries ensues. New discoveries have been fewer as exploration activity globally has slowed due to the reduced oil price environment.

From a proven oil reserve totalling 129.2 billion barrels, Africa produced 8.2 million barrels of crude oil per day (bbl/d) in 2014. Over 76% of this production came from Nigeria, Algeria, Egypt and Angola in 2014.

The fragile political situation in North Africa continues to have an impact on production levels, which saw another year-on-year decline in oil production in the region of 22%. Libya alone, in the throes of civil war, saw production decline by almost 50%! Despite continued insurgency in South Sudan, production has increased by just over 60% compared to 2013. At 159 000 bbl/d, this is still a far cry from pre-2013 production levels of 240 000 bbl/d. This is largely due to the damage that has been sustained by the local infrastructure, and analysts expect a full rebound only by 2020.

As of the end of 2014, Africa has proven natural gas reserves of just fewer than 500 trillion cubic feet (Tcf) with 90% of the continent's annual natural gas production still coming from Nigeria, Libya, Algeria and Egypt. This is a slight drop in reserves compared to 2013, and production also decreased slightly over the period. Consequently, the continent still has nearly 70 years of natural gas production available given current production rates.

The gas reserves indicated in this publication are as of the end of 2014 and do not include the recently upgraded reserves for Mozambique, which are estimated by the US Energy Information Administration (EIA) to be 100Tcf on their own. By the end of 2015, we will likely see a significant amount added to the overall proven gas reserves total for the region. Nigeria has plans to quintuple natural gas production by 2020, so the gas economy in Africa could be well-poised for an uptick in activity.

Growth and development

Overall, industry activity on the continent has slowed given the reduced oil price. Exploration activity has been the hardest hit, though Kenya has seen marginal onshore success over the past year. The focus still seems to be on East Africa and developing its significant gas projects, while some players are turning to South Africa as hopes for favourable legislation are renewed.

Despite a slack off in activity, Africa continues to grow as governments and players alike plan their next moves. It is clear through our interactions that many companies are taking a different perspective on the challenges they face. They are being looked at as realities that can and must be dealt with if they wish to enter African markets. Strategies are therefore being implemented to handle the new African reality. This lull in activity is giving the industry a moment to make plans for the execution of large-scale projects while also formulating a strategy that will make them more competitive for the future in the new African market. While the industry is in a fragile state, we at PwC envision that the players who survive the downturn in prices the best will emerge as agile machines with well-thought-out plans to execute in this dynamic and exciting market.

In this time of reduced exploration spend, many companies have decided to focus their effort on seismic surveys and seismic interpretation. To do so, some have had to negotiate extensions to existing licences, but governments seem to be willing to do so in most cases given current circumstances. Another focus area that seems to be gaining momentum is the development of infrastructure. Studies are underway in various parts of the continent to determine environmental impact and economic viability for everything from pipeline construction to port development and even building new roads.

There are many prerequisites that must be met in order to achieve the growth that we hope to see across Africa. While dealing with corruption is a reality, progress seems to be happening. The Democratic Republic of the Congo (DRC) becoming EITI (Extractive Industries Transparency Initiative) compliant in 2014 is one example of such advancement. People skills and skills retention is another focus area that countries and companies alike are working to improve as we gear up for growth in Africa.

There are still exciting opportunities within the African oil & gas industry including:

- New exploration blocks on offer through competitive bidding rounds – driven by governments' desires to encourage exploration and production (E&P) activity;
- Independent power producers (IPPs) in areas with a shortage of power supply;
- Liquefied natural gas (LNG) plant engineering and construction for both export and import;
- Port development, potential industrial development zones and management thereof;
- Pipeline engineering and construction (helping to monetise discoveries);
- Potential activity in unconventional gas plays, especially in South Africa where enabling legislation seems to be making progress;
- An uptake of local skills and knowledge transfer;
- Gas-fired electricity generation;
- Other gas monetisation projects for local use (methanol, fertilisers, urea);

- Stability of supply and security of supply with a reduction in exports;
- Foreign direct investment inflows;
- Focus on local content and supplier development; and
- Infrastructure development megaprojects.

The challenges

While no job is without its challenges, oil & gas companies operating in Africa are taking varied approaches to address the unique set of obstacles they encounter. In conversations with industry players, it has become evident that for many, 'challenges' have moved into a category that would be better-named as 'realities'. The one challenge that came through as a potential show stopper, however, is uncertain legislation.

While poor physical infrastructure, local content and skills shortages still feature in the top five hurdles for developing an African oil & gas business, companies feel that they can develop an approach to deal with these issues. Roads and pipelines can be constructed. Local content can be managed. People can be trained and developed. Clear and attractive legislation and regulation, however, can only be influenced. Without it, companies are willing to simply walk away in favour of working in other regions of the world that do offer this fundamental prerequisite. Opportunity costs must always be considered. Oil & gas is a long-term business after all. Almost every aspect of the business comes with uncertainty. Legislation cannot be one of them.

With activity reduced, this is a good time for companies to address challenges related to doing business in Africa. Strategic planning is necessary for continued, profitable presence on the continent. The players that emerge when the oil price rebounds are going to be agile engines that are ready to take on the market.

Getting costs under control is the first step to take. Once costs are under control, the strongest players will be looking at acquisition opportunities if their balance sheets can accommodate them. While mergers and acquisitions (M&A) activity has not been as high as we expected, activity could still ramp up.

In addition, we expect that new licence and farm-in activity will likely increase. This would give the strongest players access to new acreage, which they could then begin to evaluate seismically while waiting for the oil price to improve before commencing with exploration drilling.

Natural gas continues to be high on the African agenda for both producers and consumers. In Angola, LNG came online, but production was forced to stop due to feedstock not meeting the engineering requirement. Production is expected to be back online at full capacity by early 2016.

For Mozambique, legislation has made progress for large-scale LNG projects. Both Anadarko and Eni are positive that they will be able to reach final investment decision (FID) soon, which will enable them to meet their target for first gas in 2020.

Tanzania also continues on the LNG path with hopes of achieving first production shortly after Mozambique. Continued electricity shortages around the continent have led policymakers to gas as a viable power feedstock. Many of these programmes have progressed, and various studies have been commissioned or completed, especially in South Africa.

Oil & gas skills shortages continue to pose a challenge in Africa, but this is one area that companies feel they have a good grasp of at this stage. Many of them are no longer investing heavily in skills development as they have already established programmes and are now simply operating them.

Retention of skilled resources will soon become the main theme dominating the operating environment in many countries. Donor funding continues to flow into the continent, while skills and knowledge transfer continue to flavour initiatives from entities such as the World Bank. In addition to donor funding, governments are establishing training programmes, and many of the private players are also working to educate in the sector. GE Oil & Gas has an Oil & Gas University based in Florence, Italy and has recently started work in Africa. They recently conducted a number of training sessions in Maputo, for example.

No list of oil & gas challenges would be complete without mention of the commodity price given the current environment. Over 70% of our respondents believe that the oil price will have a significant impact on their businesses over the next three years. This is especially the case for companies that focus their activities on exploration, including the oilfield services (OFS) companies. While we see that the sudden price drop has left many companies in a fragile state, we believe that with the right activity and strategic planning, these players will be poised and agile for consistent performance throughout the market's cycle.

Gearing up for growth

The top challenges identified by respondents in the oil & gas industry remain largely unchanged since our last review. Uncertain regulation, poor physical infrastructure and corruption have remained in the top three, with slight variation in their position relative to each other.

Top six challenges in developing oil & gas business in Africa

	2015	2014	2012	2010
Uncertain regulatory framework	1	1	3	1
Poor physical infrastructure/ supply chain	2	3	1	2
Corruption/ethics	3	2	2	3
Lack of skill resources	4	5	4	4
Taxation requirements	5	6	16	10
Local content requirements	6	7	5	

Rank: 1 High, 6 Low
Base: 52
Source: PwC analysis

Uncertain regulation continues to pose strategic threats to the industry. The pattern of concern over regulation varies by position in value chain and geography. More than 80% of Tanzanian respondents regarded regulatory uncertainty as the top challenge facing the business.

In July 2015, the Tanzanian Government passed a highly disputed Petroleum Bill that mandates a 12.5% royalty for oil and gas production in onshore or shelf and a 7.5% royalty for offshore. Further, the state share of natural gas profit would range from 60-85%, pegged on specific daily output.

Other countries where respondents indicated general concern about regulatory uncertainty include Nigeria, Kenya and Angola. More than 50% of respondents in these countries saw regulatory uncertainty as a significant impediment to growing the business in Africa.

Poor physical infrastructure/supply chain is a long-standing impediment for the industry. It has moved up to second place from third in 2014. Areas in which infrastructure remains limited are likely to see development of existing discoveries stalled unless there is a domestic need for the resource.

Corruption and ethics cannot be overemphasised as a top challenge, with transparency and accountability remaining key concerns. Companies and governments alike should remain cognisant of the far-reaching effects on shareholder value, reputation and citizen benefit should corrupt practices not be cut down significantly.

More and more countries are implementing or signing up to the global Extractive Industries Transparency Initiative (EITI). In 2014, the Democratic Republic of Congo (DRC) became EITI compliant, it is hoped that growing compliance will contribute significantly to the fight against corruption in both the DRC and Africa in general.

Africa's reserves continue to promise substantial economic gains. These are currently estimated at 7.6% of the world's proven reserves. Oil revenues make up a significant portion of the gross domestic product (GDP) of many African countries. Deflation in the oil price has limited potential for exploration of new resources. Despite this, there are still opportunities to explore in some play types. Onshore, conventional plays enjoy relative technical simplicity due to well-tested geological approaches and they are significantly cheaper.

The growth of natural gas also opens up potentially lucrative opportunities for Africa. According to the International Energy Agency (IEA), Africa holds approximately 2,613 Tcf of technically recoverable natural gas reserves, which is just over five times higher than the proven reserves. Mozambique and Tanzania particularly, have focused the world's attention on East Africa as an emerging player in the global industry. Such potential provides countries in Africa increasing opportunities to capitalise on the economic benefits of developing this resource further.

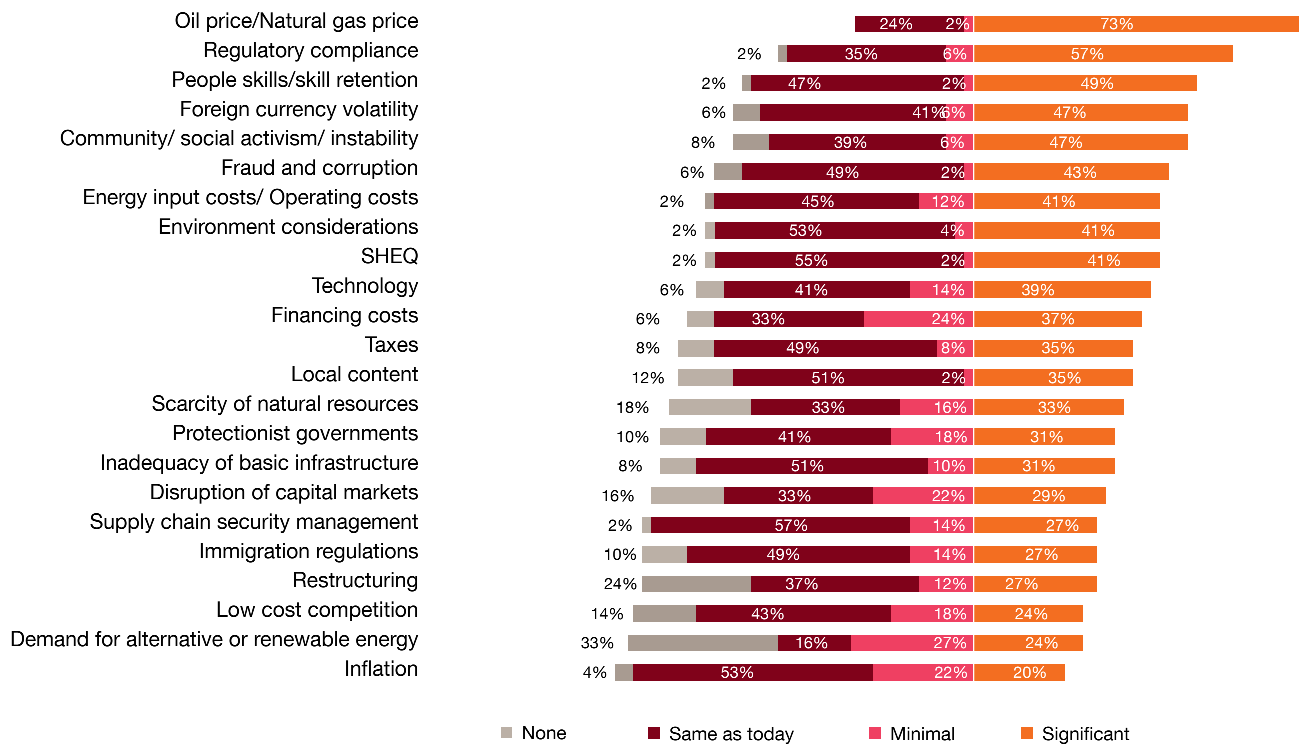
Becoming agile for growth

Gearing up for the promise of growth in the industry remains a challenge in itself and requires an ability to navigate a highly-challenging environment. Companies need to revisit and understand their core capabilities and evaluate their business models to ensure that they support the long-term growth promise while remaining agile enough to meet future challenges.

We asked respondents to share their thoughts on the African business environment and how it will affect their businesses' ability to cope with challenges into the foreseeable future.

Fig 1: Factors most likely to impact business in the next three years

Q: Rate the projected impact of the following on your business over the next three years



Base: 53
Source: PwC analysis

There have been some changes in the pattern of challenges identified by industry players compared to previous years.

The **price of oil and natural gas** takes prominence as the highest impact factor – with over 70% of respondents identifying it as having significant impact on their business over the next three years.

A number of companies are looking to cut costs and improve operational efficiency. More than two-thirds of respondents revealed that they will be looking at some level of formal cost reduction measures over the next three years.

Fortunately, industry players continue to look beyond current prices when planning for the longer term. Over 90% of respondents expect the oil price to increase gradually over the next three years. Respondents estimated that the price would remain in the US$60-70 range in 2015 and will reach US$80-90 by 2017. Some industry analysts estimates the oil price to only reach US$76 by 2018. However, in our experience, not all players share the risk of a reduced oil price equally; their position in the value chain, play types and national fiscal dependence on oil revenues determine how much of the risk they bear.

OFS companies are some of the hardest hit by the oil price decline, especially in Africa, as there has been mounting pressure from upstream operators to reduce costs.

Indeed, the reduced oil price has far-reaching effects for economies heavily reliant on oil and natural gas – Angola is one such case. All of our respondents from Angola rated the price of oil as having the highest impact on business over the next three years.

Angola's economy will suffer from significantly lower oil prices. The African Development Bank expects GDP growth to decelerate to 3.8% in 2015, down from the 4.5% registered in 2014.

The risks to the Angolan economy are not just limited to the implementation of austerity measures. A reduced budget could mean the Government is not able to pay civil servant salaries and a reduction in the provision of social services. This could increase the risk of social instability – which makes its appearance as the third most likely factor to affect business in 2015, compared to 11th place last year.

There have been efforts to diversify the fiscal base in Angola and efforts to reduce the ratio of oil revenues to total public revenues seem to be yielding results. Oil now accounts for around 70% of total public revenues compared to 80% over the past decade.

People skills and skills retention is rated the second most likely factor to impact business over the next three years. Skills mismatches, regulatory uncertainty and operational sophistication compound the associated costs even further.

Governments and private companies in the oil & gas industry continue to invest in skills development. Our respondents highlighted that local content and skills development will be one of the key investment drivers for growth over the next 3-5 years.

Ranking of factors most likely to impact business

	2015	2014
Oil price/natural gas price	1	4
Regulatory compliance	2	5
People skills/skill retention	3	7
Foreign currency volatility	4	18
Community/social activism/instability	5	11
Fraud and corruption	6	13
Energy input costs/operating costs	7	10
Environment considerations	8	12
SHEQ	9	1
Technology	10	14
Financing costs	11	22
Taxes	12	6
Local content	13	8
Scarcity of natural resources	14	16
Protectionist governments	15	2
Inadequacy of basic infrastructure	16	3
Disruption of capital markets	17	17
Supply chain security management	18	15
Immigration regulations	19	23
Restructuring	20	9
Low cost competition	21	20
Demand for alternative or renewable energy	22	19
Inflation	23	21

Rank: 1 High, 23 Low
Base: 53
Source: PwC analysis

Community/social activism, instability and unstoppable political events, ranked fourth, are a noteworthy concern in the oil & gas industry. This is the highest this item has placed as a factor affecting business since we conducted our first review. Respondents from South Africa, Mozambique, Nigeria and Kenya, in particular, expected community/ social activism/instability and unstoppable political events to have a significant impact on their business. These are some examples of notable developments in this area:

- Well before the current oil price slide, some oil & gas majors sought to dispose of Nigerian onshore assets, which have been fraught with industrial-scale oil theft, insecurity and spills. Some analysts have estimated the theft of crude oil from pipelines to be more than 100 000bpd.
- The border dispute between Kenya and Somalia has long kept investors away due to lack of legal clarity on who owns the potential offshore oil and gas reserves. The long running maritime boundary dispute may be nearing an end as the two countries were seeking an out-of-court settlement in July 2015. This follows a pledge from the Government of Somalia indicating a readiness to drop a case filed against Kenya – as reported by Foreign Affairs Secretary of Kenya, Amina Mohammed, in June 2015.

The inextricable link between commodity prices and the foreign exchange market has meant that foreign currency volatility also ranks higher than in previous years. The effects are even more pronounced in countries that are highly susceptible to global financial market volatility. Respondents from five countries expect this to be the most impactful on business over the next three years.

Strategic priorities

Strategy can provide a competitive advantage when it focuses on the right areas and can navigate around constraints. Considering a range of pressures in the oil & gas industry, we asked respondents to share their top strategic focus areas for the short to medium term.

Fig 2: Top strategic focus areas over the next three years

Q What are the top five strategic focus areas for your company over the next three years?

Base: 52
Source: PwC analysis

As an asset-intensive industry, **asset management and optimisation** remains a top strategic focus for oil & gas. Many oil & gas companies hold ageing assets, which places a premium on the need for good asset optimisation to manage operational risks and improve profitability. In the current business climate, no oil & gas player can afford to retire assets early due to mismanagement.

Asset optimisation should address improved management of 'hard' elements such as project portfolio optimisation, costs, supply chain, maintenance effectiveness and major projects. The softer aspects, such as performance management, leadership and communications and engagement are equally important.

In our experience, some typical issues hindering optimisation include overly reactive maintenance execution, uncertainty around capital spend project prioritisation, poor cross-functional cooperation and weak management decision support. A strategy that aims to optimise assets and achieve operational excellence must address these areas and more.

Once again, **skills development and people training** is a top strategic focus area. The industry has always been mindful that the correct supply and mix of skills drives all other strategic goals. As a result, respondents rated local content and skills development as one of the key areas they will invest in to realise growth over the next 3-5 years.

Given the mix of geopolitical and economic risks and opportunities associated with operating in any region, **geographic diversification and expansion** has moved up five places since our last survey.

The deflated oil price has stalled exploration activity across the continent. With the associated cost and operational pressures, it is no wonder that we did not observe exploration activity as a top strategic focus area in our conversations this year. In our 2014 review, this was a top strategic focus area, second to asset management and portfolio optimisation.

Our emphasis on a long-term, agile approach encourages companies to develop scenarios to help them look at how they can begin to position themselves to compete in an environment in which the oil price is significantly higher than today.

The PwC Stress Test (discussed in more detail later in this report) can help companies that take it to measure their level of exposure and sensitivity to weak hydrocarbon pricing environments. When taking short-term measures to cope, such as strategic cost reduction, companies should keep long-term strategy for Africa top of mind, which includes positioning for exploration activity when the pricing environment improves.

Looking forward

Financing and investing

The last financial year has been challenging for the oil & gas industry globally and in Africa as commodity prices have dropped significantly making projects less profitable and in some cases, economically unviable.

It has become more difficult for companies to find foreign investment as many investors who have been holding onto oil & gas sector shares over the last year are feeling some pain with stocks down, in many cases as much as 30%.

Foreign investors often take a long-term approach and philosophy that focuses on buying quality stocks at low prices, especially if they are trading at a valuation that is lower than that of similar companies. The whole sector is trading below historical valuation levels and with the oil price and forecast oil price starting to rise, investment could start to flow once again from industry investors who believe these stocks offer a good opportunity for significant rewards in the future.

OFS and construction companies are struggling, and lower steel and oil prices could provide an opportunity for developers to negotiate more favourable agreements.

While farm-out activity decreased in Africa in 2014, the fundamentals of why remain relevant as they provide companies with the opportunity to:

- Obtain production;
- Increase their portfolios;
- Gain acreage diversification;
- Spread the company risk;
- Share costs;
- Allow for increased capital expenditure;
- Share prohibitively high costs for an entire block;
- Allow smaller players to enter the market; and
- Allow operators to come in and develop blocks.

Trading companies continue to look at investing in the African market by buying assets or entering into joint ventures across the supply chain from exploration and production through to storage and distribution.

We believe the industry can look forward to an exciting and dynamic future with an ever-changing competitive landscape and new market entrants seeking a share of Africa's significant growth potential as they are willing to take risks that international oil companies (IOCs) are not.

IOCs are selling assets and concentrating on their 'core' oil and gas exploration and production businesses that focus on delivering growth and higher valuation multiples for their shareholders.

Selected oil and gas farm-in/out investment in Africa

Country	Original owner	Investor
Morocco	Chariot Oil	Woodside
Morocco	Puravida Energy	Freeport-McMoRan Oil & Gas
Ivory Coast	African Petroleum	Buried Hill Africa
Benin	Elephant Oil	Red Rock Resources
Senegal	Stream Oil & Gas	Transatlantic Oil
Nigeria	Eni, Shell Petroleum Development Company of Nigeria, Total	AGR Group ASA
Chad	Caracal Energy	Glencore Xstrata plc
Chad	Chevron Corporation	Government of Chad
Nigeria	Eni, Shell Petroleum Development Company of Nigeria, Total	Mart Resources and Midwestern Oil & Gas Company
Nigeria	Eni, Shell Petroleum Development Company of Nigeria, Total	Newcross Petroleum Limited
Angola	Total S.A.	Sonangol
Nigeria	Eni, Shell Petroleum Development Company of Nigeria, Total	Crestar Integrated Natural Resources
Nigeria	Mart Resources	Midwestern Oil & Gas Company
Cameroon	Bowleven	LUKOIL, New Age
Angola	Statoil	Sonangol
Nigeria	Belemapil Producing	Seplat Petroleum Development
Nigeria	Allgrace Energy	Eland Oil & Gas
Tunisia	Chinook Energy	PT Medco Energi Internasional
Nigeria	ENGIE	Foxtrot International
Chad	AMCON	Pan African International Group
Chad	Green Energy International	Lekoil
Nigeria	Rift Petroleum Group Holdings	Tower Resources
Nigeria	MENA Hydrocarbons	SacOil Holdings
Angola	Chorus Energy Ltd	Swift Oil
Nigeria	Jacka Resources	Sterling Energy
Nigeria	ConocoPhillips’	Oanda
Namibia	Eco (Atlantic) Oil & Gas	Tullow
Namibia	Pan African	Eco (Atlantic) Oil & Gas
Nigeria	Total E&P	Aiteo Eastern E&P
Tunisia	DNO	Petrogas E&P Tunisia
Senegal	Petrosen and Timis Corp	Kosmos
Egypt	DEA Deutsche Erdoel	BP

Source: PwC analysis

After a rush of bidding rounds in 2014, 2015 and 2016 appear to be comparatively quiet with only a handful of bidding rounds expected. This is partly due to the flurry of bidding rounds in the previous couple of years and a consolidation of these agreements together with the lower oil price and lower interest to invest.

Both Mozambique and Uganda’s bidding rounds were held up while new petroleum legislation was enacted. The Kenyan Petroleum Bill of 2015 proposes that oil blocks will also move to a competitive bidding round with a possibility of 46 blocks next year.

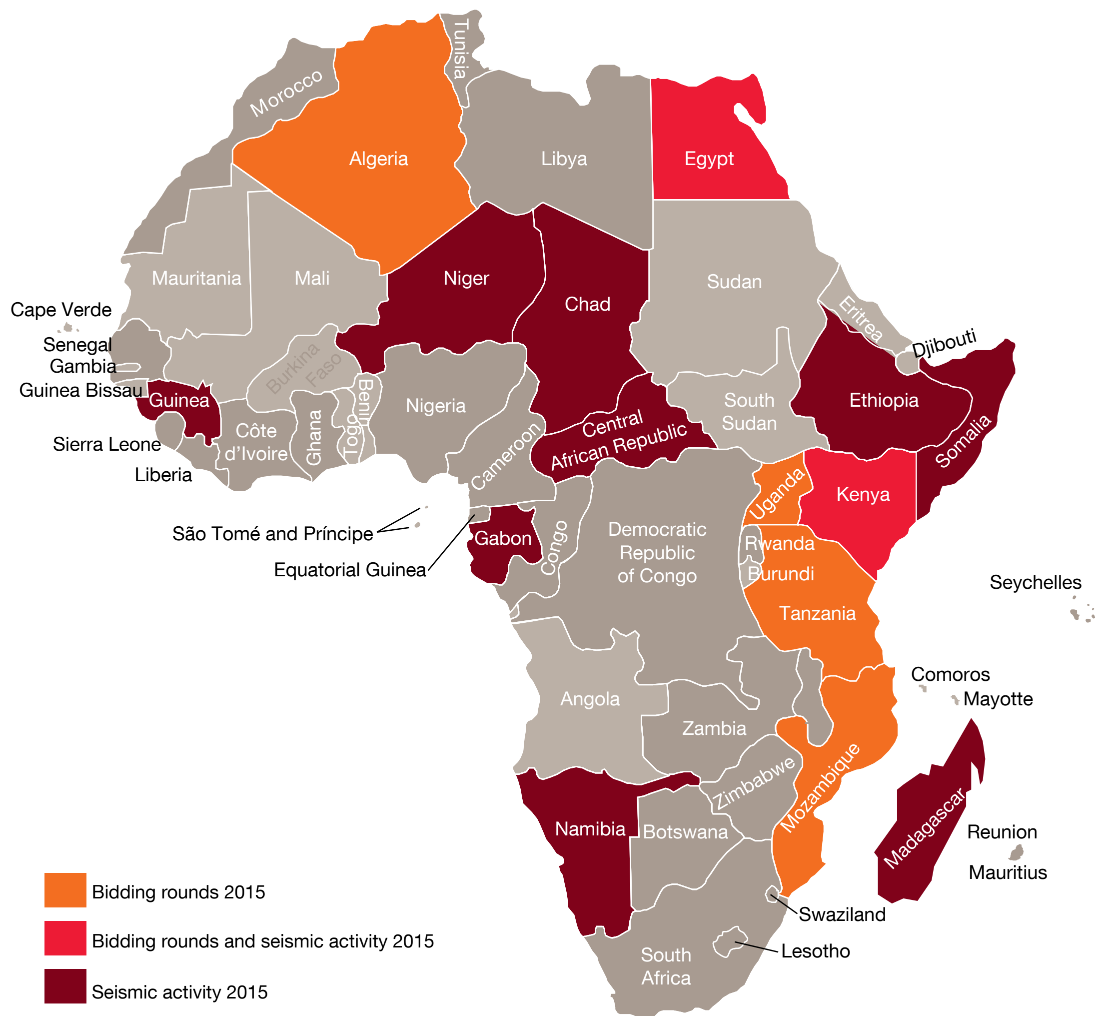
Bidding rounds

Countries	Expected bidding rounds
Uganda	Q3 2015 extended process
Mozambique	Q3 2015 extended a number of times already
Egypt	Extends bidding round Q2 2015
Algeria	Q3 2015
Kenya	2016 possible
Tanzania	2015 possible

Source: PwC analysis

Although exploration drilling is down, a ray of hope is the increase in seismic survey activity, particularly in countries not known for their oil and gas reserves. Countries such as Gabon, Somalia, the Seychelles, Madagascar, Namibia, Guinea-Bissau, the Gambia, Central African Republic, Niger, Chad, Ethiopia, Kenya and Egypt have all seen seismic survey activity over the past year. The increased level of seismic survey activity opens the possibility of increasing future exploration activity in these countries.

Selected bidding rounds and seismic activity, 2015



Note: Other countries may be planning seismic and bidding rounds in 2015

The challenge of securing finance

It is hoped that recovery is imminent, but if the oil & gas industry in Africa is to succeed, governments must promulgate and ratify oil & gas regulations, encourage the monetisation of assets and eliminate policy uncertainties and overly restrictive legislation when developing the industry.

It would appear that in Nigeria, the Petroleum Industry Bill (PIB), which has only been partly ratified, has had less of an impact on funding than expected as many companies have factored in the country risk. It would also appear that the risk is relativity high, and IOCs are divesting. International financiers may also look at funding other capital projects and shift more investment into the 'new frontier' countries that have fledgling oil & gas industries. It has been estimated that US$50 billion has been lost in oil & gas capital investment in Africa's biggest economy and most populous country.

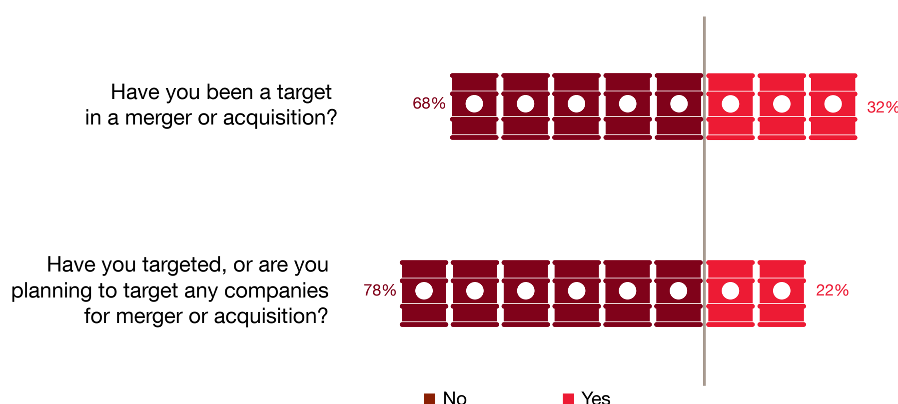
Investment in South Africa has stalled for another year as lawmakers work to approve amendments to the Mineral and Petroleum Resources Development Act (MPRDA). Companies have put spending on hold until there is clarity on the Act. A new clause entitles the state to a 20% free carry in exploration and production rights and an 'uncapped' further participation clause enables the state to acquire up to a further 80% at an agreed price or under a production sharing agreement. This bill is now up for re-evaluation and is expected for release later in 2015.

Merger and acquisitions (M&A)

Although M&A activity was low in 2014/15, around one-fifth of respondents have been targeted, and a third of respondents have targeted or intend targeting companies for acquisition. This suggests that an increase in M&A activity can be expected in the near future.

Fig 3: M&A activities

Q: Have you been a target for M&A activity? / Have you targeted or are you intending to target companies for acquisition?

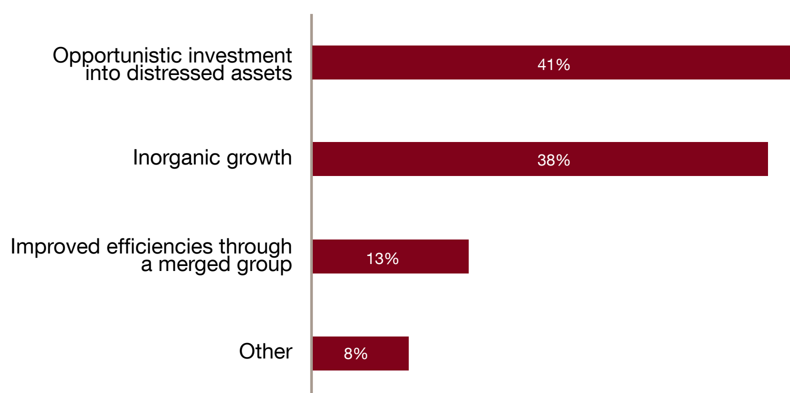


Base: 52
Source: PwC analysis

The main driver noted for M&A activity is opportunistic investment in distressed assets where a company can acquire quality assets for a good price and have potential for growth.

Fig 4: ***Drivers of M&A activity***

Q: What are your main drivers for M&A activity?



Base: 52
Source: PwC analysis

In 2014 and 2015, investment and deal activity in Africa decreased dramatically compared to the previous two years.

The weak balance sheets and distressed companies lend themselves to potentially a once-in-a-generation opportunity to pick up valuable assets at a bargain price.

The potentially huge international megamerger which could see Shell acquire BG for US$86 billion suggests that certain BG assets in Madagascar, Tunisia, Kenya, Egypt and Tanzania could be farmed out or sold in the future.

Halliburton acquired Baker Hughes for US$35 billion with the aim to insulate both companies from a slowdown in drilling and potentially allow for higher charge-out rates than if they were forced to compete for declining demand. This megamerger is likely to reduce the number of offices in Africa.

Major African gas projects will also be under increased scrutiny, as oil-linked LNG prices have also dropped significantly. We don't envision that the major LNG projects in Mozambique and Tanzania will be cancelled outright, but costs are a major concern for investors.

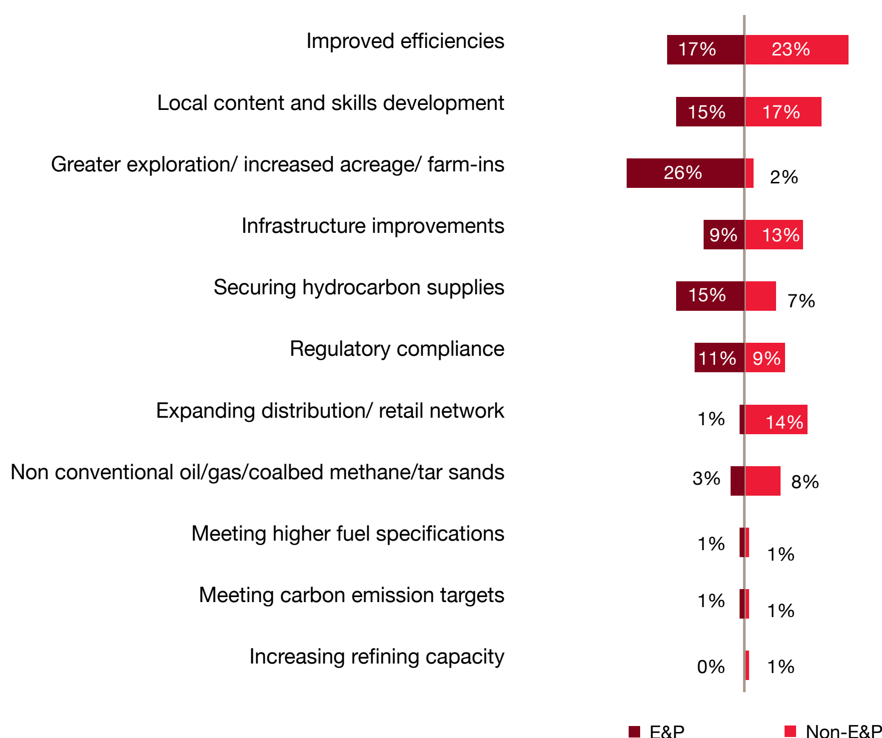
Total capex needed to build a two-train LNG project in Mozambique is a massive US$2.14 million per bcf of net gas volume. That's a total investment of US$26.1 billion. With such high stakes, it's no wonder that investors may wait for some rebound in the oil/gas price.

Another option would be to modify contract prices for LNG to de-link them from oil, but we don't see this as probable in the short to medium term, though the direct indexation that we have seen in the past may be modified. It is also likely that some short and spot market contracts will supplement the guaranteed long-term LNG revenue contracts that international investors require prior to investing in large infrastructure projects.

Both countries are introducing new energy policies and regulations with the express aim of attracting foreign capital by establishing a transparent regulatory and taxation environment. The decision by the consortia in Tanzania and Mozambique to invest in LNG projects is significant as no new greenfield investment decision outside the US and Australia has occurred for some years.

Fig 5: Strategic focus in the medium term

Q: What are the top five strategic focus areas for your company over the next three years?



Base: 52
Source: PwC analysis

Non-E&P respondents (which include service companies, downstream operators and refiners) indicated that three of their top four areas for strategic focus will be regulatory compliance, improved efficiencies and local content and skills development.

Non-E&P respondents indicated that their top priority is improved efficiencies as they seek to extend the life of their assets through upgrades and maintenance, utilise new assets and concentrate on their core business. Respondents indicated that improved efficiencies could be achieved with a renewed focus on key aspects of their business.

Improved infrastructure is considered important as respondents noted that to operate in Africa, it is necessary to invest in local infrastructure if they intend to develop their business on the continent, especially in remote areas and emerging markets.

Non E&P companies that had strong downstream marketing businesses indicated that they were focusing on increasing their distribution and retail market via organic growth and more commonly through acquisitions.

Forty-one percent of E&P respondents said that they would be investing in the development of drilling or exploration programmes, which is significantly lower than in 2014 when 70% reported this as a key strategic focus. This suggests that there has been a change in focus, with a greater emphasis on investing in other areas such as local skills, infrastructure and improved efficiencies. There also seems to be a concerted focus on producing or developing assets.

A key investment driver over the next 3-5 years is 'improving efficiencies' as industry players try to get the best returns from their assets and reduce their cost bases.

Discussions with respondents revealed that most anticipate a reduced level of competition for acreage compared to previous years as the number of discoveries and the interest in Africa and exploration and production as a whole is down. Companies are focusing on internal issues and monetising assets that they already own.

The positive is that E&P companies have indicated that they would like to secure more acreage via bidding rounds, farm-ins and acquisitions as they still see value and huge opportunities for growth in conventional oil & gas discoveries in Africa.

Discoveries

Global discoveries of new oil and gas reserves dropped to their lowest level in at least two decades in 2014, if shale oil and gas reserves in North America are excluded. In 2013, nine of the largest 20 discoveries were in Africa, whereas in 2014 this had risen to 11. The picture is not, however, as rosy as the numbers would suggest since the average size of the discoveries decreased. The top 20 global discoveries in barrels of oil equivalent (BoE) terms dropped by 35%, while African cumulative discoveries in the top 20 dropped by 38%, despite the overall increase in number. According to Rystad Energy data, these African discoveries decreased from 3.5 billion BoE to 2.2 billion BoE.

The worldwide slowdown appears to be less alarming in Africa than in the rest of the world as this annual decline is the first while the global number and size of discoveries has decreased for four years running. While the slowdown in global discoveries has been especially noticeable for oil, Africa bucked the trend with substantial finds in Angola, Senegal and the Republic of the Congo.

Apart from the Nyonie Deep gas and condensate discovery in Gabon, the other major gas discoveries were found in East Africa. However, these large East African gas finds were not as significant as in 2013. Offshore gas exploration remains a beacon of light for Africa as can be seen in the accompanying table.

Most significant oil and gas discoveries in 2014 – all offshore in Africa

Global ranking of discovery in 2014	Discovery	Type of discovery Oil or Gas	Country	Company	Estimate by Rystad Energy (BoEs)
4	Orca (Full Field)	Oil	Angola	Cobalt International	269.1 million
5	SNE, SN	Oil	Senegal	Cairn Energy	258.1 million
6	Minsala Marine	Oil	Republic of the Congo	Eni	236.8 million
7	Nyonie Deep (NFW), GA	Gas	Gabon	Eni	224.8 million
9	Piri, TZ	Gas	Tanzania	Statoil	194.1 million
10	Orca (early), AO	Oil	Angola	Cobalt International	188.2 million
11	FAN, SN	Oil	Senegal	Cairn Energy	188.0 million
13	Tubarao Tigre, MZ	Gas	Mozambique	Anadarko	172.5 million
15	Kamba, TZ	Gas	Tanzania	BG	152.9 million
16	Taachui, TZ	Gas	Tanzania	BG	149.0 million
19	Giligiliani, TZ	Gas	Tanzania	Statoil	125.7 million

Source: Rystad Energy

According to Rigzone, the number of offshore rigs decreased by 18% between June 2014 and June 2015. This is due to the decrease in the Brent crude price by almost 48% and the average gas price by 31%, which has led to a number of operators suspending exploration activities. The reduction in rig activity provides opportunities for companies as they are able to secure exploration rigs at a significantly reduced rate from a year ago as rig contractors compete in an ever-decreasing market.

Africa certainly still holds the promise of exciting opportunities for growth and investment. Some discoveries in the region are still being appraised, and these could increase the continent's proven reserves. With Angola's LNG liquefaction plant partially coming back online in November 2015 and the proposed or planned investment in LNG trains in Nigeria, Mozambique and Tanzania, natural gas is expected to make a change in the African landscape.

Frontier project delays could be seen offshore South Africa, sub-salt Congo and Angola, and shale gas in South Africa. In addition, frontier areas and areas where there is an uncertain regulatory environment, high local content requirements and limited infrastructure are likely to suffer most and not receive the external investment that is necessary for development.

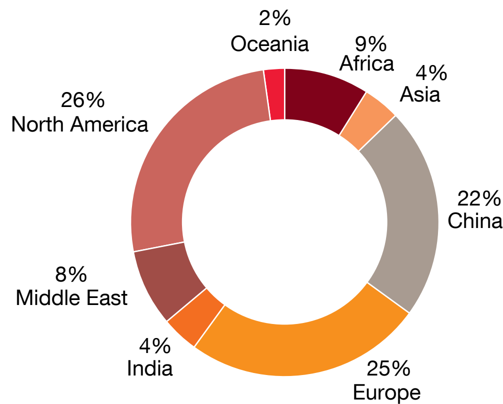
External investment will be difficult to source while costs remain high and commodity prices are low. Ghana, Namibia, Mozambique and other countries are looking at, or are currently using, gas to power projects to stimulate development of existing discoveries and their economies. Internal gas usage is relatively unaffected by low international gas prices and will continue to be developed.

Foreign direct investment

Foreign direct investment is expected to come from the three main regions with North America and Europe continuing to invest and China entering through the likes of Sinopec, CNOOC and CNPC aggressively targeting the African market. The Chinese Government is reliant on oil produced in Africa, especially Angola, which is now the second-largest exporter after Saudi Arabia to China. There is concern that Chinese funding might be detrimental to other investors.

Fig 6: Sources of foreign direct investment

Q: From where do you believe most foreign direct investment for your region will originate?



Base: 53

Source: PwC analysis

Overall even though the number and value of mergers and acquisitions in Africa have decreased in 2014, the interest and potential benefits for investors is good with 11 of the top 20 discoveries occurring in Africa.

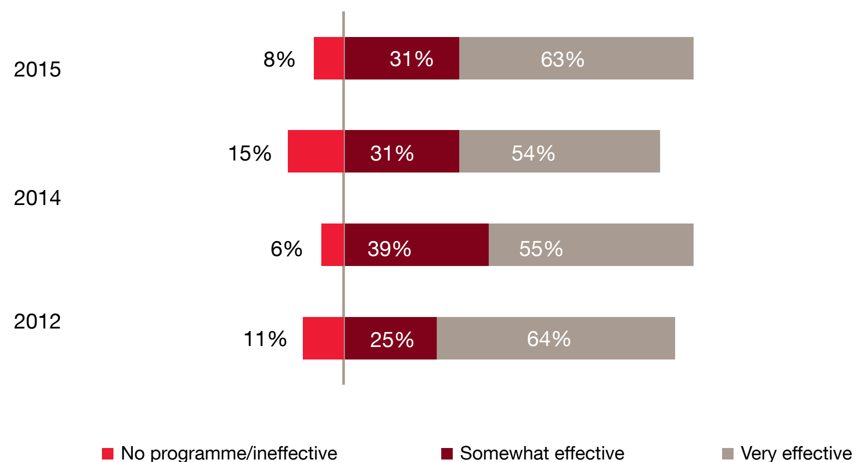
Differing agendas

Contending with fraud and corruption

Over 98% of respondents indicated that their companies have an anti-fraud and anti-corruption programme in place – of these, more than 60% believe that the programme is very effective at preventing and or detecting fraud.

Fig 7: Effectiveness of compliance/fraud programme

Q: How effective do you believe the your compliance programme is at preventing instances of fraud / corruption?



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Source: PwC analysis

However, the continued concern around corruption suggests that anti-corruption legislation and programmes are only part of the equation. More crucial is their enforcement and accountability measures taken. It is probably for this and other reasons that about one-third of respondents regarded their programmes as only 'somewhat effective' in preventing and detecting fraud.

Only about 8% of respondents indicated that they did not have a compliance programme. About 15% of respondents in our previous review indicated that their compliance programmes were ineffective. This year, none of our respondents stated that their programmes were ineffective. This suggests there may have been some improvement in combatting fraud and corruption. There is still a long way to go, and corruption remains firmly in the top five of respondents' challenges to developing their businesses.

Over 43% of respondents indicated that fraud and corruption would have a severe effect on their businesses. This is as it should be, as the far-reaching socio-economic and reputational damage of corrupt practices is irreversible.

Government officials continue to be implicated in a number of fraudulent activities across the continent. Bribery and procurement fraud remain some of the top types of economic crimes in the broader energy, mining and utilities sectors as revealed in the PwC Global Economic Crimes Survey 2014. Worryingly, a considerable portion of these are systematic corruption and fraud.

Governments should take care to assess the potential for corrupt bidding and procurement processes. Some process patterns, revealed in our conversations with industry, raise concerns around the potential for several loopholes in bidding and procurement processes in some countries.

Cross-border anti-corruption legislation – such as the US Foreign Corrupt Practices Act – expands the global reach of corruption control. Over the last decade, several African oil & gas players have been investigated and penalised under the act. In some of these cases, bribery and illicit financial flows have led to a decline in shareholder value, asset seizure and reputational damage.

Global Corruption Perceptions Index 2014: Ranking of top African oil & gas producers

Country	GCPI 2014 Rank (out of 175)
Ghana	61
South Africa	67
Egypt	94
Algeria	100
Tanzania	119
Mozambique	119
Nigeria	136
Kenya	145
Angola	161
Libya	166

Source Data: Global Corruption Perceptions Index 2014, Transparency International

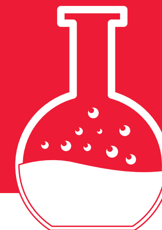
Despite pervasive fraud, some governments around the continent have made some efforts to increase transparency in the industry.

Ghana, which is EITI compliant, is one of the few countries in sub-Saharan Africa that received a slightly more favourable ranking in the 2014 Global Corruption Perceptions Index. The country is also noted to have adopted an 'innovative' approach to combatting corruption – Ghana EITI reports include elements of auditing in addition to the reconciliation of payments and revenues, transfers to sub -national levels of government and utilisation of transferred funds.

Nigeria's new President, Muhammadu Buhari, dissolved the board of the Nigerian National Petroleum Corporation in June as he has promised to stamp out corruption in the country's economy.

An increased emphasis on accountability, innovative approaches, and the ongoing assessment of the effectiveness of compliance programmes are some of the ways in which we can begin to realise the socio-economic benefits of combatting fraud and corruption.

Sustainability



New discoveries are not the only basis for sustainability

As mentioned earlier, data depicts that discoveries of new oil and gas reserves worldwide have dropped to their lowest level in at least two decades in 2014. In addition, the number of offshore rigs worldwide that have a contract in place has decreased from 733 in July 2014 to 652 in July 2015. This decrease is also reflected in West Africa, where the contracted offshore rig count has decreased from 69 in July 2014 to 53 in July 2015.

This corresponds with findings from our conversations with the oil & gas sector, which reveal that greater exploration has decreased in rank from first to third in the past year for key areas that respondents plan to invest in to realise growth. Furthermore, exploration and finding new resources has decreased in ranking within the top five strategic focus areas in oil & gas companies, from second last year to fourth this year.

Only 33% of respondents considered the scarcity of natural resources as having a significant impact on their businesses over the next three years, and unconventional resources were not considered as one of the top strategic focus areas nor as one of the key investment areas for a vast majority of the respondents, ranking in the bottom five for both of these categories. These results accord with the findings from a survey by Cowen and Company which revealed that global exploration and production expenditures are expected to decrease by 17% this year.

The decrease in exploration as a strategic and investment priority is largely a response to the decrease in oil and natural gas price over the past year. Respondents indicated that the oil/natural gas price is expected to have the most significant impact on businesses over the next three years. This is a deviation from last year's results where it ranked fourth amongst the list of elements expected to affect the businesses of the respondents over the next three years.

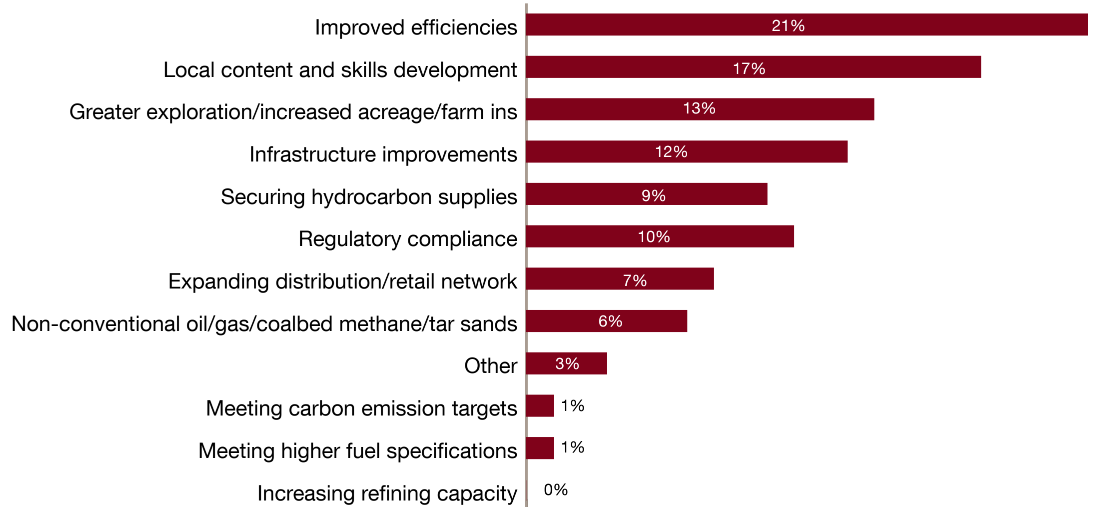
Furthermore, 53% of respondents indicated that the volatility of the commodity price will have a high to very severe effect on their businesses for the year 2015, 57% for the year 2016 and 49% for the year 2017. Of the respondents that considered the oil/natural gas price as having a significant impact on their businesses, 61% were from upstream companies. Upstream companies are highly impacted by the oil/natural gas price since the price at which they sell oil/gas is regulated by the market, yet their costs of production are difficult to manoeuvre.

These findings confirm that under the current economic conditions, new discoveries are not the only basis for sustainability. Increasing production potential through improving efficiencies and operational excellence is an alternative that companies are considering for sustainability.

Figures 2 and 8 depict this since both improving efficiencies and strategically focusing on asset management and optimisation/operational excellence are ranked first amongst the key priorities businesses are considering to realise growth.

Fig 8: Key investment drivers over the next 3-5 years

Q: What are the key areas that you will invest to realise growth over the next 3-5 years?



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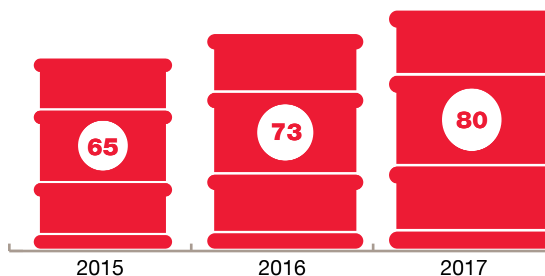
Source: PwC analysis

Reducing costs is another important aspect that businesses are considering for sustainability. A vast majority (71%) of respondents reported that they will be looking at formal cost reduction measures in the next three years. Of those, 82% are looking to reduce costs by 10% or more. Leading cost reduction initiatives being considered include reducing general and administration costs, reducing personnel costs and restructuring.

In as much as businesses are considering other measures to ensure their sustainability over and above monetising natural resources, they are also expecting the commodity price to increase in the future. Figure 11 depicts average crude prices expected by oil & gas businesses over the next three years.

Fig 9: Average expected crude price US$

Q: What oil price do you expect at the end of the next three years?



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Source: PwC analysis

Technology infrastructure

Technology infrastructure is a key area in which oil & gas companies should invest to maximise their growth potential. However, respondent feedback suggests focus on technology infrastructure investment is taking the back seat. Only 39% of respondents regarded technology as having a significant future impact on their businesses, and only 4% considered technology infrastructure as one of the top strategic focus areas for their businesses over the next three years.

Old technology/lack of innovation was considered by only 18% of respondents as having a significant impact on the supply chain effectiveness and efficiency of companies, ranking in the bottom three of the factors impacting their functioning. However, poor technology infrastructure has risen up the ranks of the biggest challenges in developing the oil & gas business in Africa, from 11th in 2012 to 7th this year. This hints that even though technology infrastructure may not be a key element on which businesses are focusing to achieve growth, they do acknowledge to some extent its role in developing the industry in Africa.

LNG as an option

The power shortages in sub-Saharan Africa have acted as a severe barrier to economic and human development across the region. The series of major offshore gas discoveries in East Africa, specifically in Mozambique and Tanzania, have sparked interest in expanding the use of natural gas for power generation to address the power shortages on the continent. Gas-to-power in sub-Saharan Africa is now considered both as a supplement to hydropower resources and as a replacement for carbon-rich fossil fuels such as coal and liquid fuels.

However, considering that gas resources are concentrated in just a few countries, exploration activities have decreased over the past year and gas transportation infrastructure is virtually non-existent, securing gas for its adoption as a power generation fuel poses many challenges. The importation of LNG is being considered by some countries that do not have substantial proven natural reserves as a solution to meeting some of these challenges.

This is beneficial to these African countries in the current economic climate since the market environment for the international trade in LNG is becoming increasingly favourable to importers. This is the result of the recent decrease in demand for LNG globally, with supply expected to be in excess until the end of this decade. It remains to be seen if the buyers' market will endure or if there will be a return to a sellers' market post-2020.

LNG is favourable for African countries that have substantial gas reserves. According to the IEA (2013), Africa holds approximately 2,613 Tcf of natural gas reserves that can be technically recovered. For the year 2012, Africa accounted for 16.8% of global LNG export volumes, with Nigeria being the fourth-largest exporter of LNG in the world (LNG Industry, 2014). In Mozambique, LNG exports are expected to begin by 2020. When this occurs, Mozambique will be competing with other new entrants such as Australia and Papua New Guinea.

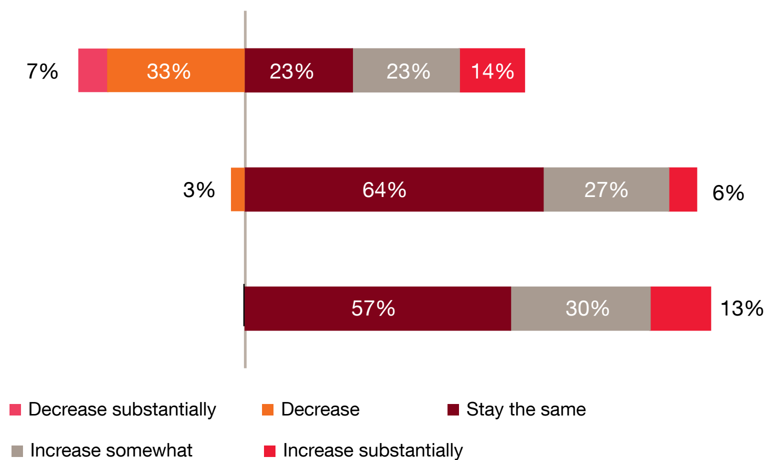
Tanzania is also expected to benefit from recent natural gas discoveries with LNG exports expected by 2025. Angola became an LNG exporter in 2013 with the commissioning of the Angola LNG plant in Soyo. The plant has a capacity of 5.2 million tonnes per annum. While Angolan LNG production was temporarily halted due to technical difficulties with the feedstock, it is expected to be back online at full capacity by early 2016. These developments create significant economic benefits for Africa and provide opportunities for LNG importation into other gas-indigent regions within Africa.

Acreage and licence costs

In contrast to previous years, respondents are generally uncertain about what to expect with acreage/licence acquisition costs as there is a spread across the spectrum with respondents believing they could decrease, stay the same or increase. Thirty-six percent believed acreage costs would increase, and this is especially noted in Kenya and Mozambique. The other East African respondents from Tanzania believe acreage costs would remain constant; whereas, Uganda's, due to recent tax and regulatory uncertainty and business difficulties, is expected to be lower. Countries with developed markets such as Nigeria and Angola expect acreage costs to decrease as potential reserves valuations are affected by the oil price.

Fig 10: Expected changes in acreage and licence costs

Q: Over the next year, what do you expect to happen to acreage / licence acquisition costs?



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Source: PwC analysis

Acreage awarded through direct negotiation between the government and interested investors is often based on criteria that are not predefined or known to market participants. It is also possible to have adjudication based on a set of criteria not clearly defined, which allows considerable government discretion in awarding exploration and production rights.

Exploration rights governed by bidding rounds are generally allocated to the bidder who meets set criteria and bids the highest amount. Bidding rounds are considered more transparent and can be designed in such a way as to make them robust to political and lobbying pressure as well as corruption. Countries such as Kenya, Tanzania and Egypt have moved to bidding rounds in order to create an improved environment for bidders/ investors.

Impact of renewables/alternative sources

Despite developments in renewable and alternative sources of energy across Africa, respondents do not expect demand for these to have a significant impact on oil & gas businesses over the next three years. In fact, renewables/alternative energy has decreased in order of significance since 2012, ranking second-last among factors that could potentially impact businesses in the next three years.

Demand for alternative or renewable energy, position out of 23

2015	Movement	2014	Movement	2012
22	▼	19	▲	20

Source: PwC analysis

Change in competitive environment

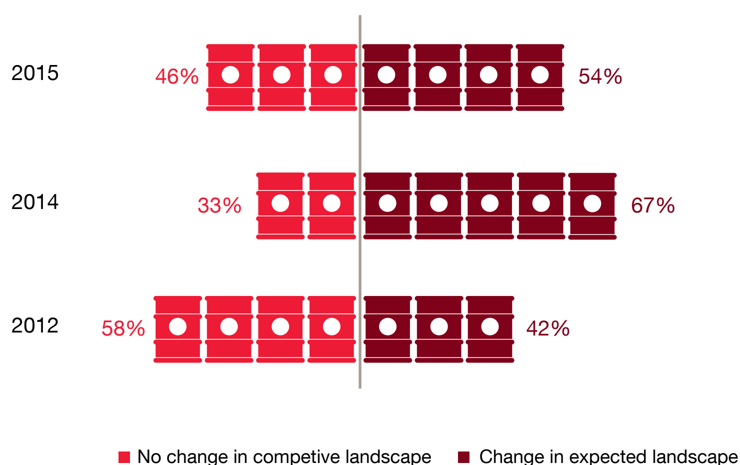
Africa's growing commercial attractiveness remains a focus for international oil companies wanting to do business on the continent. The results of our survey clearly show that there is an expectation that the competitive landscape is going to change, with more than 50% of respondents sharing this view.

Certain countries, in particular Angola, do not believe the competitive landscape will change much within their respective countries. Angola has a well-developed oil and gas sector dominated by the natonal oil company and global players where the cost of entry and doing business could be restrictive with entrenched players likely to dominate the market for years to come. The threat of new entrants into the oil & gas market remains likely; although the charge into Africa has slowed down with the decrease in commodity prices over the last year as companies aim to consolidate and reduce costs and become more efficient.

Respondents anticipate that large traders are assessing the potential for acquisitions in Africa, particularly in the downstream sector where they can supply and sell.

Fig 11: Expected change in the competitive landscape

Q: Do you anticipate a change in the competitive environment with new competitors entering the region in which you operate in the next five years?



Base: 52
Source: PwC analysis

For example, smaller E&P companies may find it hard to compete with large multinationals whose activities are usually geographically and vertically integrated, while OFS companies and companies engaged in ancillary activities along the value chain could more easily move into Africa and establish a competitive business.

The key to surviving the ups and downs of the cyclical oil and gas market is to learn to adapt quickly and be more agile.

Companies must ensure that they do not overreact to the low oil price and downsize to a level where they are unable to respond to the upturn in the market.

Companies have indicated that poor planning, forecasting and scheduling combined with a lack of skills in the correct positions, poor infrastructure and lack of transportation are the main areas in which supply chain effectiveness and efficiency are most likely to have an impact

The reliance on third parties, system integration and internal controls and accountability were considered to affect supply chain effectiveness and efficiency less.

Prioritising environmental and development imperatives

It cannot be over-emphasised that all precautions need to be taken to ensure that oil and gas extraction activities never endanger their surrounding environments and do not interfere with other development imperatives.

In May 2015, the South African Government launched the Strategic Environmental Assessment of Shale Gas Development – some of the focus areas of which are measuring the impact of shale gas extraction on the environment, livelihoods and the Square Kilometre Array radio telescope.

This undertaking re-emphasises the need to consider and prevent the far-reaching environmental, social and developmental consequences of irresponsible practices. Over 90% of our respondents noted that safety, health, environment and quality (SHEQ) considerations will continue to have either an equal or more significant impact on their business looking forward.

Some respondents indicated that meeting carbon emission targets were among their key concerns for investment to realise growth in the next 3-5 years. Overall, SHEQ was rated in the top five issues that will have significant impact on respondent businesses over the next three years.

Some of the major oil & gas companies globally have already begun to take measures to limit emissions in their operations, investing in carbon capture and storage and exploring new low-carbon technologies and business models.

“For us to do more, we need governments across the world to provide us with clear, stable, long-term, ambitious policy frameworks. This would reduce uncertainty and help stimulate investments in the right low carbon technologies and the right resources at the right pace”

– Oil & gas majors, Open Letter to UN and Governments1

In May 2015, six major oil companies – BP, Total, Shell, Eni, BG and Total – called on governments worldwide to implement carbon pricing. In a letter addressed to the heads of the United Nations Framework Convention on Climate Change and COP 21, the letter calls on governments to:

> *“… introduce carbon pricing systems where they do not yet exist at the national or regional level and create an international framework that could eventually connect national systems1”*

The companies emphasised the need for direct and open dialogue in the creation and implementation of workable, pragmatic and effective approaches to carbon pricing.

Carbon pricing regulation decisions need to be consistent, global and commercially viable. Existing carbon markets and the application of ‘shadow’ carbon prices have given these companies experience in testing investment viability in a world where carbon has a higher price.

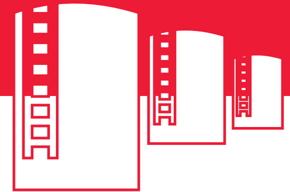
The companies also highlighted the need for clear, long-term focused regulatory frameworks – echoing the concern our respondents shared about uncertain regulation.

Sustainable business practices by oil & gas companies will ensure that there is a continued, reliable and safe supply of energy to the world while contributing to economic and social progression.

Social activism and instability could be exacerbated by irresponsible extraction practices. Companies should continue to invest time and energy into enforcing the highest safety, environmental, health and quality standards wherever they operate.

1 United Nations Framework Convention on Climate Change, http://newsroom.unfccc.int/unfccc-newsroom/major-oil-companies-letter-to-un/. (accessed 20 July 2015)

Disconnect between policy and reality



Policymakers' understanding of the industry

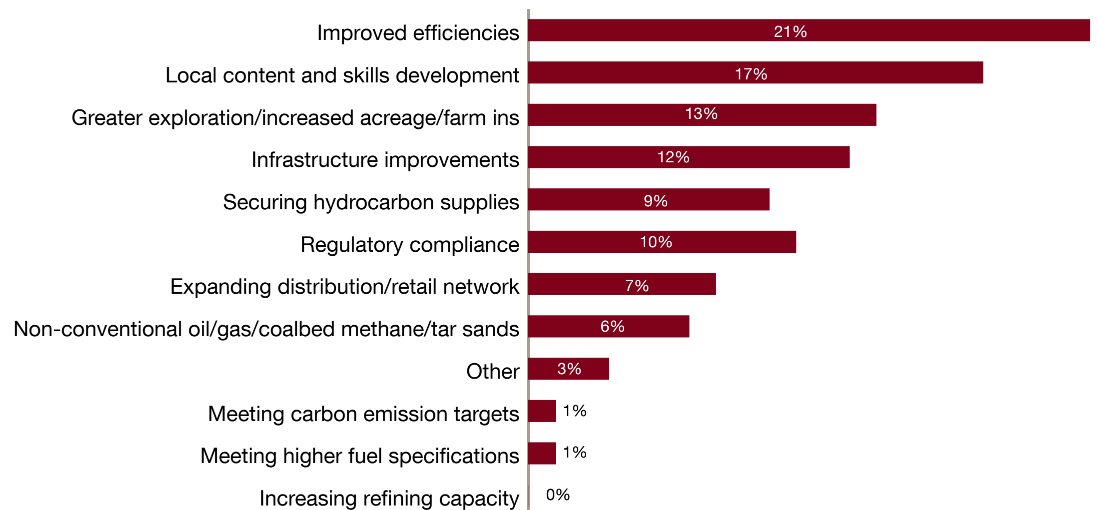
An effective regulatory system is a fundamental prerequisite for attracting and sustaining investment in infrastructure, which is a crucial component for the growth and development of the oil & gas business in Africa. The presence of a clear, consistent and fair regulatory framework is the first step needed to create a favourable investment environment, since only then can local and foreign private investors have the confidence that the government and the relevant regulatory entities will protect their rights within the country.

For our respondents, the presence of an uncertain regulatory framework is one of the biggest issues in developing the oil & gas business in Africa, ranking first on this question for the second consecutive year – 82% of respondents listed it as one of the five biggest issues facing development of the industry.

Regulatory compliance was also identified within the top five of the key areas that respondents will invest in to realise business growth over the next 3-5 years. Furthermore, 57% of respondents believe regulatory compliance will have a significant impact on their businesses over the next three years. This reflects their realisation that a significant focus on investment in regulatory compliance is required, more specifically by companies in the private sector, in order to thrive in a rather uncertain regulatory environment.

Fig 12: Key investment drivers over next 3-5 years

Q: What are the key areas that you will investment in to realise growth over the next 3-5 years?



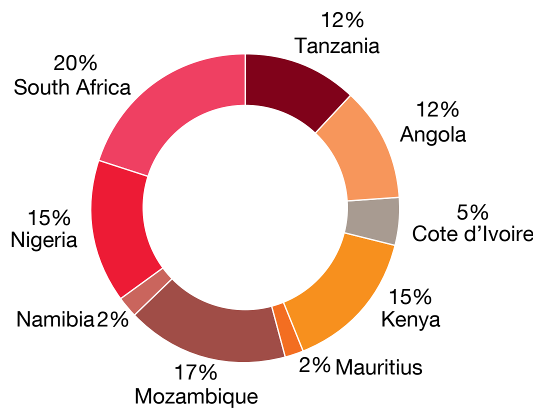
Base: 53
Source: PwC analysis

Our conversations with oil & gas players across Africa suggest the foundation of uncertain regulatory frameworks is governments' lack of understanding of the industry. This is especially the case in South Africa, where the largest proportion of respondents who listed this concern among their five biggest challenges is based. The majority of respondents considering regulatory compliance as a key investment area for growth are also based in South Africa.

South Africa's uncertain regulatory framework for the oil & gas industry is largely the result of unclear and overlapping mandates between the Government and government departments. Furthermore, the enforcement of the Minerals and Petroleum Resources Development Act (MPRDA) has raised a number of compliance challenges in the country, primarily resulting from new requirements directly introduced by the Act.

Fig 13: ***Respondents that listed uncertain regulatory frameworks as one of their five biggest challenges***

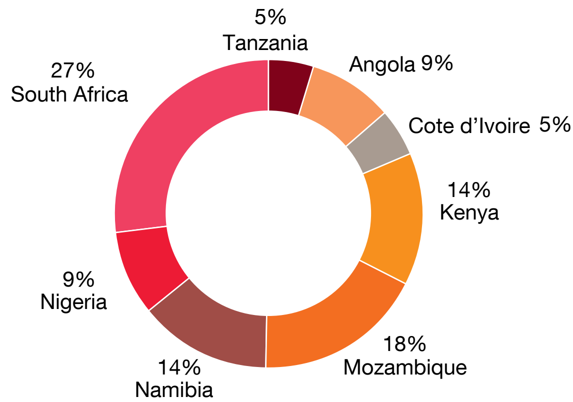
Q: What do you see as the biggest challenges in developing an African Oil & Gas Business ?



Base: 52
Source: PwC analysis

Fig 14: ***Respondents that listed regulatory compliance as one of the key areas of investment to realise growth over the next 3-5 years***

Q: What are the key areas that you will investment in to realise growth over the next 3-5 years?



Base: 53
Source: PwC analysis

One of the key tenets of effective regulation is that it should be industry conscious. This recognises the need for the regulatory framework to be updated to keep pace with changes in the industry as new risks emerge. Another important principle is role clarity of the relevant regulatory bodies, which execute mandates that are clear and not conflicting.

A path to overcoming the challenge of uncertain regulatory frameworks, which act as a barrier to growth and development, is for policymakers to increase their understanding of the oil & gas sector. All related regulators should be explicitly educated about the sector and cooperate with other bodies (both private and public) where necessary in meeting objectives that are aimed at growing the business in their respective countries.

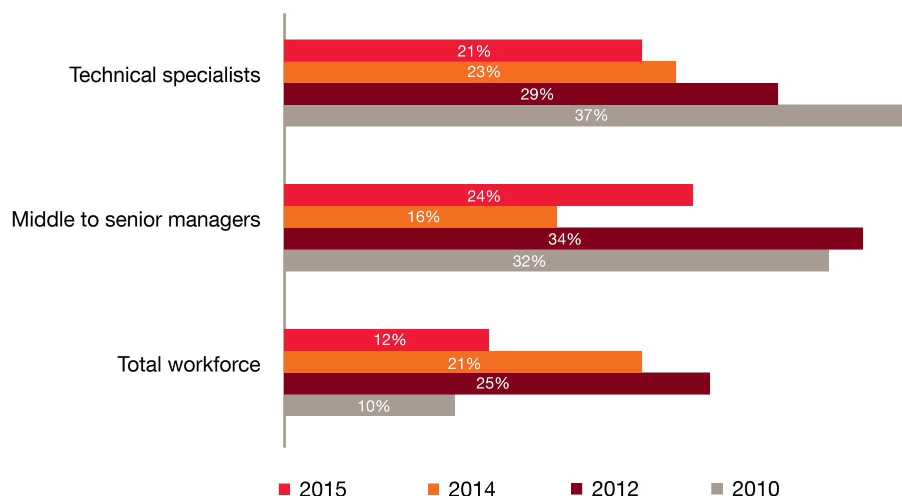
Furthermore, improving government's understanding of the industry will lead to regulation that is economically attractive for industry players. This is especially relevant in countries where resources are less proven yet very rigorous terms exist regarding the government's take.

Regulating local content and skills development in a complex world

A better-skilled citizenry that can participate productively in their local industries is the shared concern of both business and government. This is a fundamental concern of businesses across the oil & gas value chain – reflected in respondents' identification of skills development as one of the leading factors most likely to impact their businesses over the next three years.

Fig 15: ***Percentage of expatriates in different roles***

Q: Approximately what percentage of your workforce are expatriates?



Base: 49
Source: PwC analysis

Local content requirements continue to be a significant issue for the oil & gas industry. The continued drive by governments to enable locals within the energy sector is revealing a general reduction in the percentage of expatriates employed by oil & gas players in technical roles and as a percentage of the total workforce.

The total expatriate workforce has been 18% on average across 2010, 2012 and 2014. Skills shortages continue to limit the level of compliance with local content requirements by some respondents – this might partly explain the 8% increase in the percentage of expatriates in middle to senior management roles since 2014.

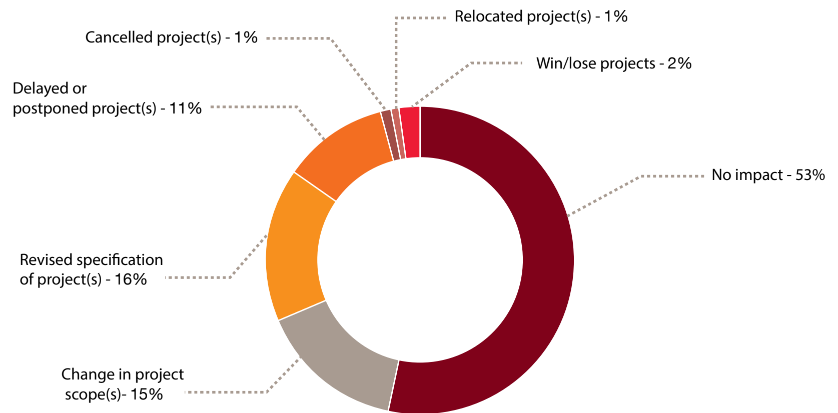
In 2010, the percentage of expatriates in technical specialist roles was 37%; in 2015, this has dropped to 21%. This could suggest an increased local technical skills base in the countries where our respondents operate.

Impact of local content on investment decisions

Over half of respondents indicated that local content and regulatory policies had no impact on their project investment decisions – this is similar to our findings from previous years. An increased number of companies had to revise project specifications as a result of local content requirements, recording a 5% increase from 2014.

Fig 16: ***Local content & regulatory policies' effect on capital project investment decisions***

Q: How have current /proposed local content and regulatory policies affected your investment decisions?



Base: 53
Source: PwC analysis

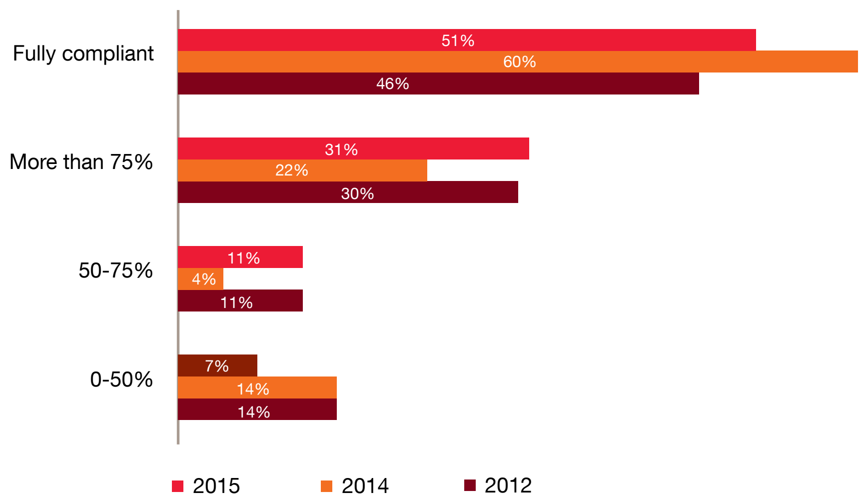
Compliance with local content regulations

The impact of local content regulations on projects can be significant. About one-third of respondents indicated that local content requirements have led to either a change in project scope or revised specification of project. However, at only 12%, fewer projects have been delayed, postponed or cancelled this year as a result of local content and regulatory policies, compared to 22% in 2014.

This seems to indicate that players in the industry are managing their business decisions proactively in meeting requirements for local content.

Fig 17: ***Level of compliance with local content regulations***

Q: How compliant are you with the local content regulations and charters in respect to nationalisation and local content of your business?



Base: 53
Source: PwC analysis

Respondents indicated that local content requirements will be the second most important investment driver over the next five years. More than 80% confirmed they are 75-100% compliant with local content regulations.

Levels of full compliance have dropped slightly from 60% in 2014 to 51% in 2015. There continues to be a number of oil & gas capacity development initiatives across the continent. Global organisations, such as the World Bank, government regulatory bodies, energy ministries and private companies are some of the most instrumental players identified.

More established oil provinces, such as Angola, have several local capacity development programmes in place. The Centro de Apoio Empresarial (CEA) in Angola acts as an intermediary between oil companies and Angolan companies registered in their certified supplier directory. They also provide training in a range of areas, including supply chain management and ethics. The CEA was established in partnership by Sonangol, Chevron, BP, ExxonMobil and Total.

Other emerging oil& gas countries are also stepping up efforts to enact and enforce local content regulations:

- Kenya

The Kenyan upstream oil & gas sector is currently governed by the Petroleum Act of 1986. Currently under revision, the Act is being reformed to deal more comprehensively with issues such as revenue sharing, transparency and local content programmes.

In June 2015, Kenyan Deputy President William Ruto asked international oil companies to consider raising capital in the local stock market to give Kenyans a stake in the local oil, gas and mining sectors.

This was at the second annual Oil and Energy Services Local Content Convention, where Ruto stressed that local participation was not limited to employment and supply of goods and services but also included making locals worthy partners in the extractive industry business. “We must find the equilibrium between profits to investors and benefits to the community,” said the Deputy President.

Ruto also urged the Ministry of Energy and Petroleum to put sector-specific local content provisions into law. He said that Africa benefitted the least from oil & gas exploitation with the resources bringing a curse and leading to discrimination against locals.

Energy and Petroleum Principal Secretary Joseph Njoroge said a bill addressing local content issues is being formulated and must incorporate measures by industry stakeholders.

- South Africa

South Africa is considered to hold one of the top 10 shale gas resources in the world. As the country reconfigures its policy to position itself as a powerful energy player, these are some of the ongoing developments:

Given the gas potential in South Africa, the Gas Utilisation Master Plan (GUMP) outlines how the South African Government believes it can facilitate investment in gas. The consideration of supply and demand dynamics, LNG importation and domestic production of natural and shale gas are among the focus areas of the GUMP. Though publication has been delayed, it is expected imminently.

The Competitive Supplier Development Programme (CSDP) aims to increase competitiveness, capacities and capabilities of local supplier bases. It is run by the Department of Public Enterprises, which oversees state-owned enterprises, and aims to contribute to employment creation, skills development and Broad-Based Black Economic Empowerment goals.

Significant updates to the Mineral and Petroleum Development Act (MPRDA) have also been discussed at length. The new terms have been discussed with industry stakeholders through Project Phakisa, and we expect to see favourable legislation soon.

A capabilities driven approach to skills development

Regulating for skills development in the oil & gas industry does not happen in a vacuum. Governments across Africa are faced with the challenge of delivering value to the public, while managing competing priorities and limited resources. Compounded by the complexity of the oil & gas industry, the task of regulation becomes a mammoth undertaking fraught with challenges.

Only government has the capacity to regulate, one of its core capabilities. From the capabilities approach perspective, governments can and should leverage their core skill set to the best possible benefit of their citizens. However, perceptions of what constitute the best possible outcomes almost invariably differ – with citizens often feeling that their governments never do enough and with some players in the private sector criticising government's involvement in industry. Without perfect foresight, it is impossible to regulate to the satisfaction of all parties involved. However, the capabilities approach to achieving developmental aims can and should address some of the blind spots.

Partnering for development in a highly complex economic climate often requires innovative solutions. The alignment of capabilities by value chain segment with the aims of policy may help achieve beneficial outcomes. For example, if a company has capabilities in exploring certain geological play types, it could partner with government to initiate training programmes designed specifically with this capability in mind.

General Electric's (GE) Oil & Gas University was established in 2005 and has been one of the most instrumental oil & gas training providers for African industry players. The initiative has provided strong support to the development of human capital in sub-Saharan Africa, delivering close to 15 000 hours of training to participants from the region. The countries most impacted by this training and development effort were Angola, Ghana, Nigeria and Tanzania together with their respective oil companies.

In 2015, GE invested a further US$50 000 in skills development in Mozambique through a localised one-week GE Oil & Gas University training for 34 mid to senior level public and private sector leaders. The training, provided for the first time in Africa, comprised courses in oil & gas value chain management, exploration, production and development of hydrocarbon fuels as well as liquefied natural gas and gas-to-liquid contracts. In 2014, GE also invested US$ 250 000 in scholarships for 70 engineers at Eduardo Mondlane University in Maputo.

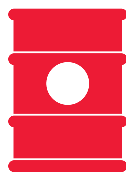
The nature of the GE programme is not only instrumental in bridging the talent gap expected to hit the industry in the short-term, but begins to facilitate shared learning and understanding between government, oil & gas companies and other stakeholders.

Fit for $50

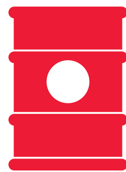
Sustaining growth and development fit for US$50 oil

Africa's oil & gas sector has, in recent years, played a crucial role in the economic growth and development of the continent. This has particularly been the case in those developing countries where recent onshore and offshore discoveries and developments, especially in West and East Africa, has contributed significantly to making the continent more commercially attractive to a wide range of global investors. The majority of the recent large discoveries in Africa have been offshore in deep water. While this adds complexity and costs to recovery, the potential returns mean they are still considered desirable.

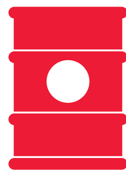
Respondents expect the Brent crude price spread to shift up over the three-year period although, if it remains within a US$30 band, it will be reasonably consistent.



93% of the respondents expect a price range of US$50-80 in 2015



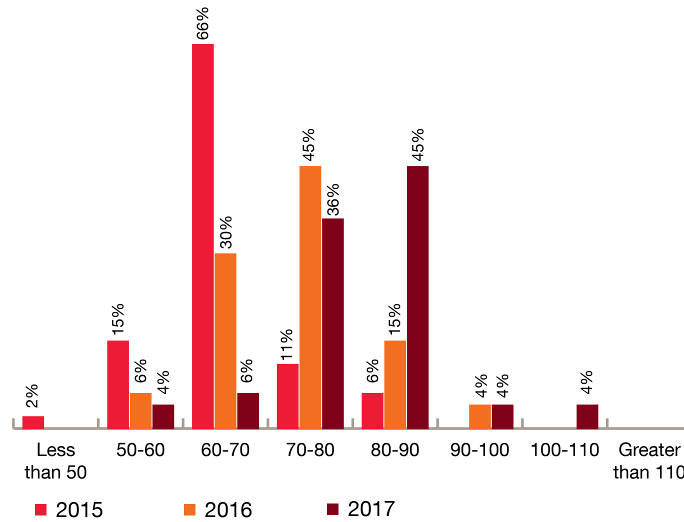
90% of the respondents expect a price range of US$60-90 in 2016



87% of the respondents expect a price range of US$60-90 in 2017

Fig 18: ***Expected crude price for the next three years (US$)***

Q: What oil price do you expect at the end of the next three years?

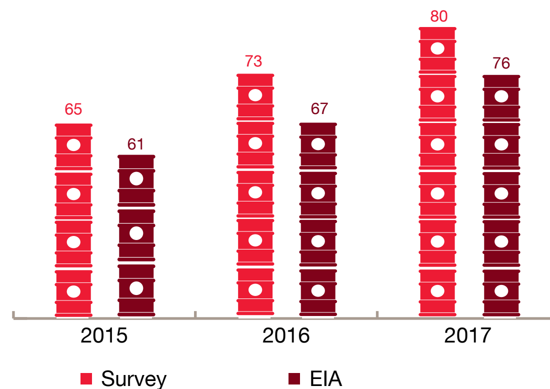


Base: 50
Source: PwC analysis

Respondent companies' average price prediction at the end of the year was aligned, albeit a few dollars slightly more positive than the EIA short-term Brent crude price forecast, for each of the next three years.

Fig 19: ***Expected average crude price over next three years (US$)***

Q: What oil price do you expect at the end of the next three years?



Base: 50
Source: PwC analysis, EIA (see http://www.eia.gov/forecasts/aeo/pdf/0383(2015).pdf)

A number of companies believe tough times lie ahead with continued low oil prices. Most had modelled projects on the assumption of a higher oil price of more than US$80 per barrel.

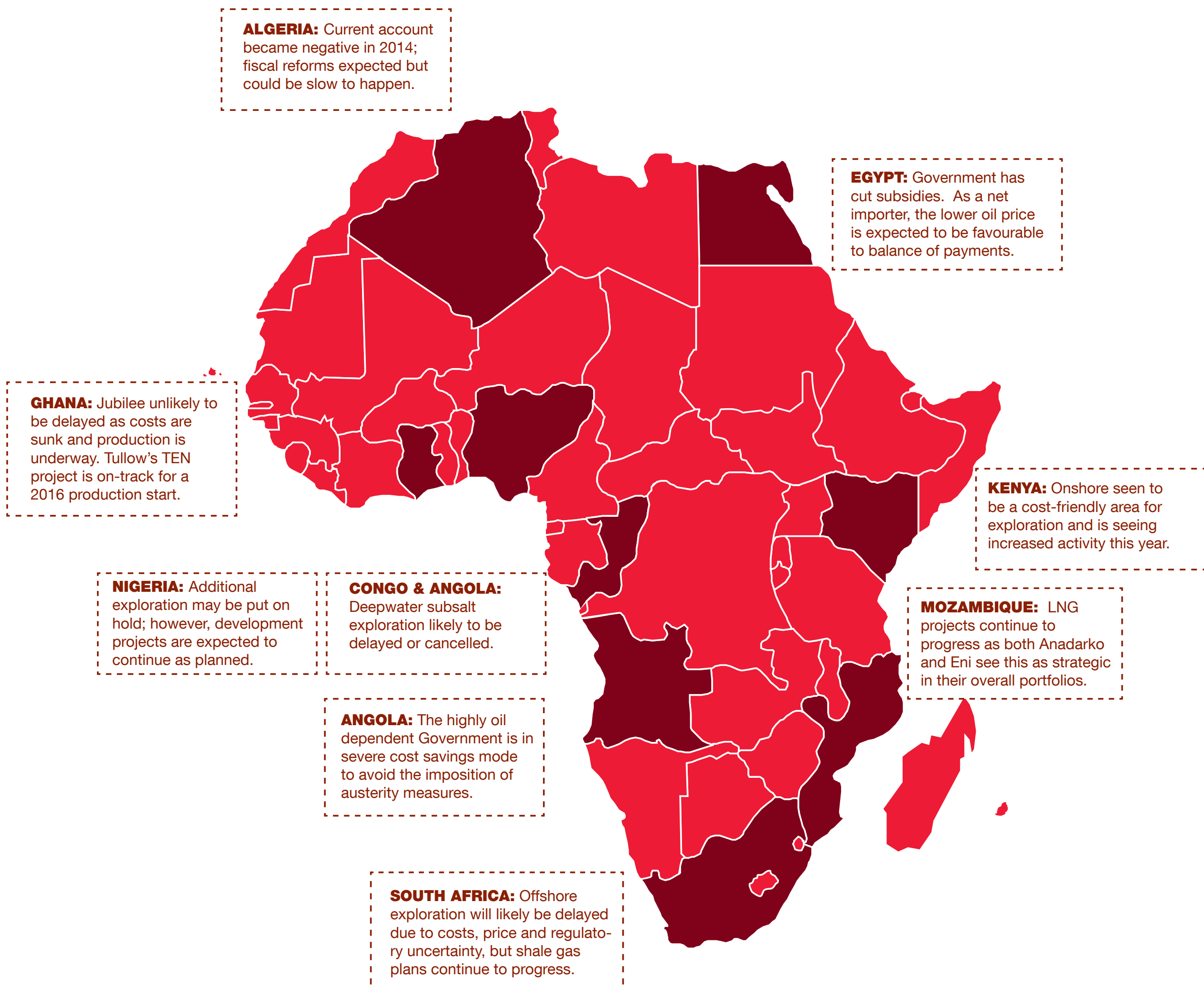
It was noted by respondents in all categories that the low commodity price would have a high, very high or severe impact on their businesses. It is more severe on the service companies whose revenue is derived from drilling activity. The oilfield service (OFS) companies, in particular, are likely to be the hardest hit as they have little control over the circumstances and will need to reduce costs, most likely through downsizing.

The downsizing and efficiencies that the OFS companies will need to implement are likely to further exacerbate profits as oil companies put huge pressures on OFS companies to drop prices and reduce margins. The effect on OFS companies can clearly be seen in Schlumberger and Haliburton both announcing 9 000 retrenchments globally and Baker Hughes retrenching 10 500.

While E&P companies have not performed in 2014, they have the advantage of continued revenue streams from production and the ability to reduce exploration costs.

The countries that have been most affected by the dramatic decrease in crude price of roughly 48% between June 2014 and June 2015 are those that are highly dependent on oil exports. This may require governments to implement austerity measures and develop realistic budgets based on a significantly lower oil price. The countries hardest hit include Nigeria, Cameroon, Chad, Angola, Republic of Congo, DRC, Gabon and Ghana.

Impact on Africa of the reduced oil price



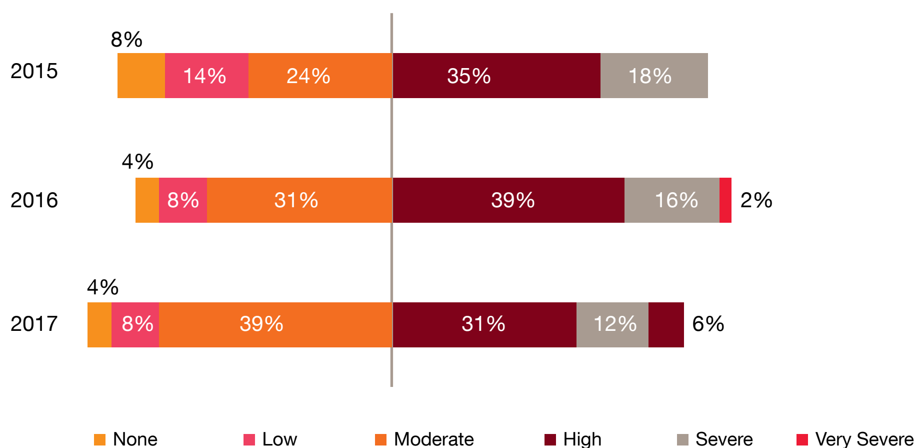
Source: PwC analysis

The lower gas commodity price, on average 31% lower than in the previous year, has also had an impact on gas producers and the fledging East African economies that are looking at monetising their assets in the next 3-5 years.

The lower oil and gas price environment has led to players in the industry redesigning and adjusting their existing financial and forecasting models based on the new dynamics within the industry.

Fig 20: Impact of price volatility on businesses

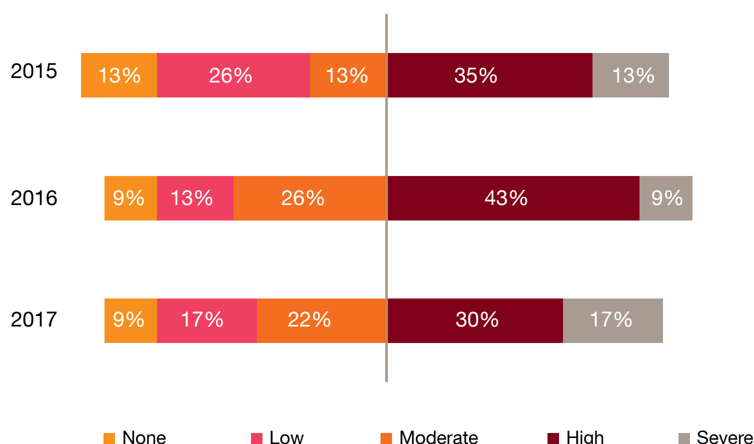
Q: What effect do you think the volatility of the commodity price will have on your business?



Base: 52
Source: PwC analysis

Fig 21: Impact of price volatility on E&P businesses

Q: What effect do you think the volatility of the commodity price will have on your business?



Base: 26
Source: PwC analysis

The volatility and, in particular, low oil price have been highlighted as the most important factors affecting the industry, with more than 50% of E&P and non-E&P companies expecting price fluctuations to have a high or very severe impact on their businesses.

Thirty-nine percent of E&P companies believe the fluctuation in the oil price will have low or no impact on their business as they are not yet in production and believe the oil price will have sufficiently recovered when they start producing and continue with their long-term strategies.

A few respondents noted that the lower oil price provides opportunities for increased exploration and development as contractor and rig costs are lower. Lower costs are being factored into models to identify the commercial viability of new ventures. The viability of these new ventures may provide an area for growth in the industry over the next few years.

Operational planning, therefore, needs to be carefully thought out, taking into account demand growth, infrastructure requirements, investment needs, potential, long-term strategies, the role of government, commodity prices and costs if companies and countries want to sustain growth and development in Africa.

We have seen various sectors pulling levers to reduce costs. Included below is a sampling of these responses.

Response by sector players to oil price drop (selected examples in recent months)

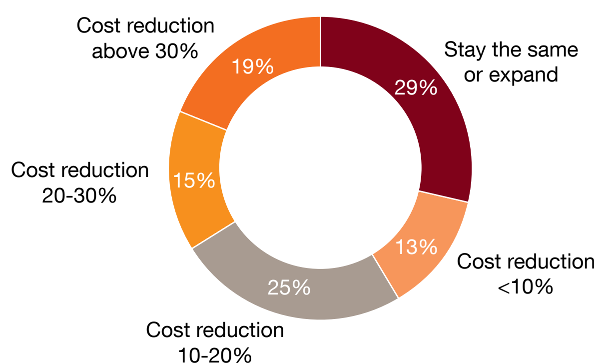
Company	Reduction 2015 capex	Pay freeze	Reduction in headcount	Reduction in contractors	Renegotiate OFS rates	Investment deferred/ abandoned	Change in business model
Apache			√				
Baker Hughes	√		√				
BP	√	√	√				
ConocoPhillips	√		√				
Halliburton			√				
Petronas	√					√	
Premier				√	√	√	
Santos	√			√			
SBM Offshore			√				
Schlumberger	√		√			√	
Shell	√					√	
Statoil						√	
Talisman Sinopec			√				
Total	√					√	
Weatherford							√

Categories at most risk to lower oil & gas prices

- *Major gas projects*
- *Frontier areas*
- *Host governments*
- *OFS companies*

Fig 22: ***Cost reduction measures planned in the next three years***

Q Are you looking at formal cost reduction measures in the next 3 years, and if so by how much?



Base: 52
Source: PwC analysis

Sustaining growth and development in Africa hinges on the ability of developing countries to monetise their natural resource reserves. For companies operating in developing countries, establishing and maintaining a robust business model and long-term strategy for capitalising on the economic opportunities associated with developing oil & gas resources is vital for sustaining growth and development and creating a sense of lucrative investment potential within each country.

Sixty-none percent of respondents indicated that they would be cutting 10% or more of their costs over the next 3 years. This is not unexpected as companies have seen a significant decrease in revenue in 2014.

For example, Baker Hughes' revenue is down 20%. The OFS companies, in particular, are aiming to cut costs significantly by more than 30%, most of which is to be achieved through downsizing. It would appear that the OFS companies are looking at each other and comparative reductions are happening across the board. Cost cutting reduction programmes are often knee-jerk reactions and may not be well-targeted and realistic.

Often during cost cutting cycles, research and development (R&D) is cut to the detriment of the company in the future. The company may be left behind as competitors improve their technology and reduce drilling costs. Regulatory uncertainty and delays in passing laws are severely hampering growth and development in the sector. Many African countries have a host of stringent laws, regulations and local content requirements that create challenges for companies and international investors to overcome. The stricter regulation could stimulate growth within countries by providing structure and clarity, but overall, they could also inhibit Africa's growth and development.

Oil & gas revenues make up a large portion of the GDP for many African countries, and if the current price environment persists, this could result in slowed development. Host governments could see a major impact on their public finances caused by the suppressed price environment. Those whose economies are not well-diversified, such as the Republic of Congo, Gabon and Angola, will be hardest hit and may have to consider austerity measures and a revision of the government's budget.

Operating costs

The depletion and reduced number of onshore and shallow offshore discoveries suggests that the cost of exploration and production will increase with greater unconventional and deepwater offshore exploration.

Producing oil and gas from deepwater shelves, tight reservoirs, mature fields and shale carries high cost implications due to the complex nature of the operational activities, infrastructure and advanced technology required. Many African countries do not have the financial or technical resources to venture into monetising less conventional reserves.

Due to the low level of exploration activity in the market, the competition by OFS to participate has led to lower contracting costs, which in turn provide an opportunity for operators to reduce their operating costs and for the higher cost offshore deepwater projects to become more viable.

Within Africa, the effectiveness and efficiency of the supply chain can be problematic. A large number of factors can affect the value chain such as poor infrastructure, lack of skills, changes in regulations, security-related issues, difficulty in sourcing material, poor market intelligence, government interventions, poor system integration and operation synchronisation, distance to market, overly-aggressive timelines and expectations with poor scholastic modelling, scheduling and planning, all creating areas where the supply chain can fail to deliver.

Respondents considered reliance on third parties, system integration and internal controls and accountability to have less of an impact on supply chain effectiveness and efficiency.

The oil & gas supply chain

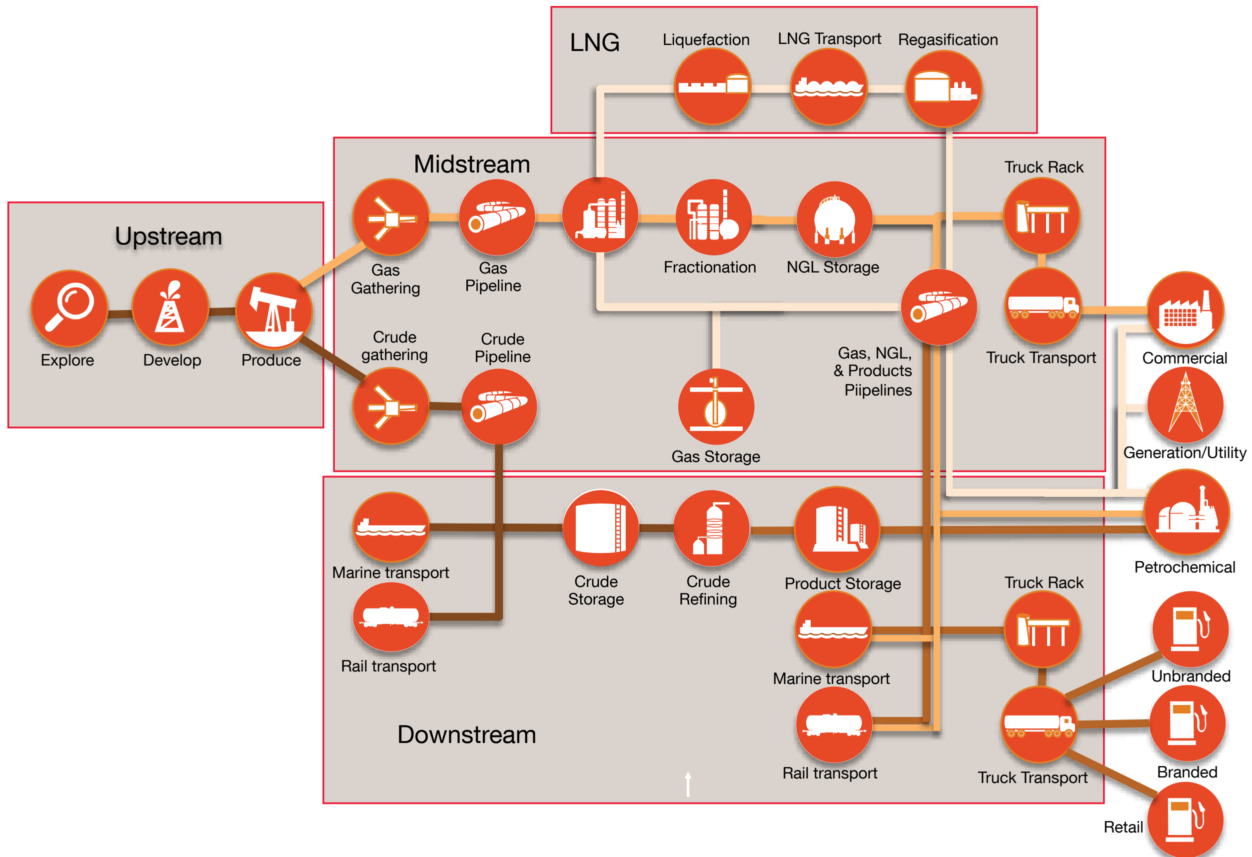
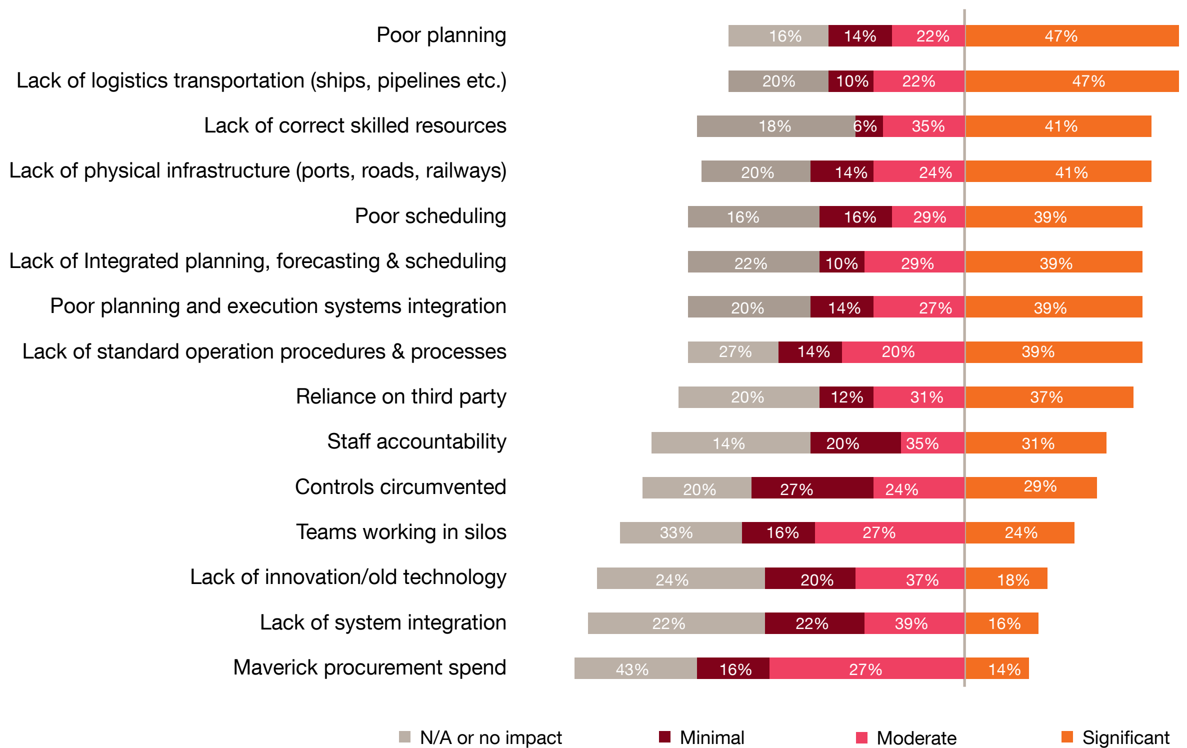


Fig 23: ***Severity of factors hindering operational supply chain effectiveness and efficiency***

Q: Rate the impact of the following items on your supply chain effectiveness and efficiency.



Base: 52
Source: PwC analysis

Few industries can benefit from maximising supply-chain efficiencies more than the oil & gas companies.

In principle, supply chain management is exercised to provide maximum customer service at the lowest cost through optimal operations.
For example, seismic analysis and prospect identification feeds into exploration activity; whereas, refining is an activity within the supply chain that continues through to production and to the end customer.

Most oil & gas operations are planned in advance with exploration and production schedules linked to distribution and supply. Distribution and supply planning and schedules are needed by the supplier and the buyer in order for synchronisation, as without prior planning and contingencies in place, the value chain can be affected. Oil & gas may require liquefaction, regasification, refining, storage and other processing prior to being supplied via pipelines, ships and trucks to end users.

Companies have indicated that poor planning, forecasting and scheduling combined with a lack of skills in the correct positions with poor infrastructure and lack of transportation are the main areas where supply chain effectiveness and efficiency are most likely to be impacted. Without good planning and scheduling of operations, it is likely that companies will encounter higher costs due to under-performance.

Developing a 'fragile to agile' strategy for the upside

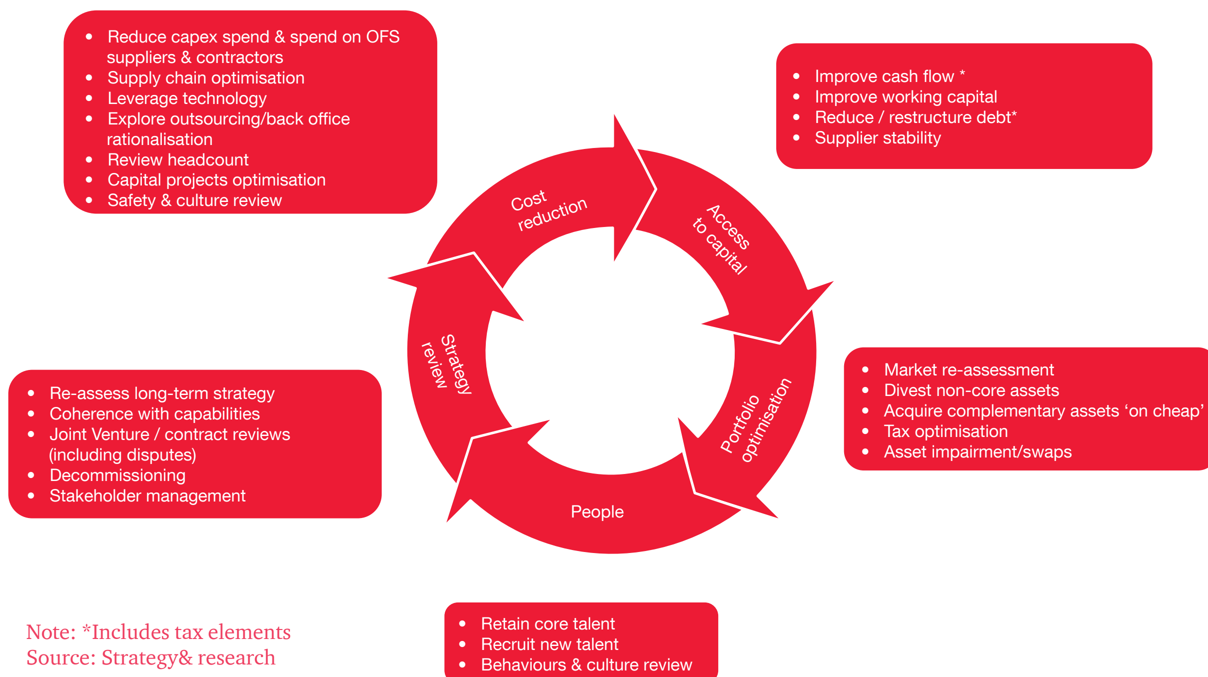
Developing a strategy for the upturn

The key to surviving the fragile ups and downs of the oil & gas market cycle is learning how to adapt quickly – being more agile! In doing this, a number of issues must be addressed. This can be done by starting with an organisational stress test.

The PwC Stress Test is a framework for developing relevant indicators to determine the level of 'stress', or exposure and sensitivity of a company to weak hydrocarbon pricing environments. It includes strategic, financial, operational and commercial elements.

Depending on the findings of a stress test, actions that can be taken include cost reduction, portfolio optimisation, strategy review, improving access to capital and people management. More detail on these potential actions are outlined in the diagram below.

Issues facing oil & gas companies as a result of falling oil prices



Note: *Includes tax elements
Source: Strategy& research

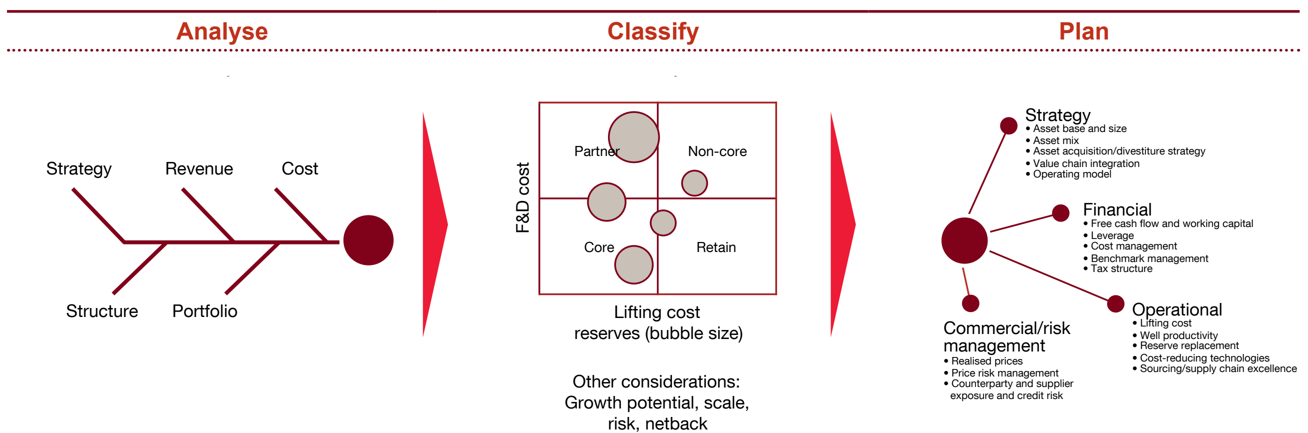
In situations of low commodity prices, many companies have a knee-jerk response and introduce broad, sweeping cost reduction programmes. Doing so could be much more effective if they took the time to understand what specific costs are, how they compare to peers and what reductions are truly possible. To be effective, cost reduction programmes must be targeted and realistic.

A health check scorecard is another useful tool that companies can utilise to determine how to optimise their portfolios in a new price regime. As margins erode, companies must move from a growth strategy to a flexible position that will support the return to a growth strategy or enable a position to endure a downturn.

The lower oil price environment has also led to a greater level of interest on the part of oil & gas companies in redesigning and recalibrating their existing financial and forecasting models, or in building new financial models, against the backdrop of a number of recurring themes.

In order to begin a cost-cutting exercise, we recommend starting with a stress test. The best way to do this is to segment the business first and then test to understand the relative expected value contribution as well as the optimal strategic, financial and operational opportunities.

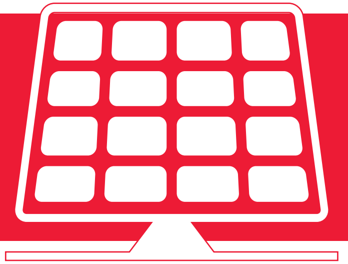
Stress test



Stress test activities

- Understand corporate strategic objectives
- Map asset base, asset mix and value chain integration
- Understand commercial and hedging strategies strategy
- Assess debt structure and cash flow and reserves
- Analyse costs per BoE by basin and operating segment to peers
- Identify value levers and calculate expected value
- Classify expected values of the portfolio based on performance, strategic fit and risk profile

Conclusion



The oil & gas industry is indeed a complex one, fraught with challenges. Despite this, the outlook need not be grim. Gearing up for a prosperous future must not be complicated or short-sighted – focusing only on mitigating the impact of very real challenges – or forget to position for market revival and the opportunities it brings.

The oil price decline, skills shortages and uncertain regulatory frameworks have put the oil & gas industry on the continent in dire straits. The combined effect of these challenges places an increased burden on exploration activity and economies heavily reliant on oil & gas revenues, which may have far-reaching socio-economic impacts as a result.

More than this, oil & gas players should take courage in the expected rebound in the oil price, which should make developing our wealth of natural resources even more attractive. Africa continues to promise an enduring, profitable presence for companies. Oil & gas is by nature a long-term business, and this should always remain top-of-mind when making crucial decisions.

Corruption and ethical issues continue to limit the true potential economic benefits of local industry. There is hope that the pattern of corrupt practices we continue to observe will gradually reverse, as more and more countries adopt international compliance standards.

Both business and governments need to rethink their fundamental roles as industry players and consider how they can begin to create lasting value. One area where this is proving possible is in skills development. A collaborative, value-focused approach ensures that governments meet their skills development objectives, while businesses begin to move beyond compliance and take a more proactive role in creating local citizen benefit.

In the current uncertain climate, we encourage all industry stakeholders to take a step back, relook, revise & re-strategise in an aim to move from fragile to agile. Martin Luther King, Jr once said “only in the dark can you see the stars” – industry players are beginning to see their stars and positioning themselves to capture the best the night sky has to offer.

Contacts

Uyi Akpata

PwC Africa Oil & Gas Industry Leader
+ 234 (1) 2711 700
+ 234 39 77 81
uyi.n.akpata@ng.pwc.com

Chris Bredenhann

PwC Africa Oil & Gas Advisory Leader
+27 21 529 2005
+27 82 373 2680
chris.bredenhann@za.pwc.com

Ayesha Bedwei

PwC Africa Oil & Gas Tax Leader
+233 (0) 302 761 500
+233 (0) 244 813 956
ayesha.a.bedwei@gh.pwc.com

Project team

Derek Boulware

+27 21 529 2353
derek.boulware@za.pwc.com

Jeremy Dore

+27 21 529 2179
jeremy.dore@za.pwc.com

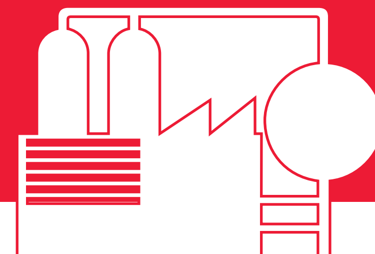
Cikida Gcali

+27 11 287 0412
cikida.gcali@za.pwc.com

Sihle Magubane

+27 21 529 2527
sihle.magubane@za.pwc.com

Acronyms and abbreviations



Acronyms and abbreviations

1P reserves	Proven reserves (both proved developed reserves + proved undeveloped reserves)
2P reserves	Proven reserves + probable reserves
bbl/d	Barrels per day
bcf	Billion cubic feet
BoE	Barrels of oil equivalent
Bpd	Barrels per day
CEA	Centro de Apoio Empresarial (Angola)
CSDP	Competitive Supplier Development Programme (SA)
DRC	Democratic Republic of the Congo
EIA	Energy Information Administration (USA)
EITI	Extractive Industries Transparency Initiative
E&P	Exploration and production
FID	Final investment decision
GDP	Gross domestic product
GUMP	Gas Utilisation Master Plan (South Africa)
IEA	International Energy Agency
IOC	International oil companies
LNG	Liquefied natural gas
M&A	Mergers and acquisitions
MPRDA	Mineral and Petroleum Resources Development Act (South Africa)
NOC	National oil companies
O&G	Oil and gas
OFS	Oilfield services
PSA	Production sharing agreement
PSC	Production sharing contract
PIB	Petroleum Industry Bill (Nigeria)
R&D	Research and development
Tcf	Trillion cubic feet

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Notes

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