From promise to performance

Africa oil & gas review

Report on current developments in the oil and gas industry in Africa.
June 2013

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Foreword

About PwC's energy industry group

PwC is the world's leading advisor to the energy industry and has been helping energy companies succeed for more than 100 years. Working with every segment of the business — from upstream to midstream and downstream — we provide business solutions tailored to meet clients' needs. Because of our skills, experience and teams of industry specialists, we excel in serving oil and gas companies wherever they may operate. In Africa, PwC has a greater presence than any other professional services firm, with offices in 31 countries and more than 8 000 staff on the ground.

This review of developments in the African oil and gas industry is the third in a series of reviews of the sector, which was initiated in 2010.

It draws upon the valuable experience and views of industry players in Africa, including international oil companies operating on the continent, national oil companies, service companies, independent oil companies and industry commentators, to provide insight into the latest developments impacting the industry.

In this edition, we take a look at what has happened in the last 12 months and in the major African markets. This year, we have also included a selection of country profiles to highlight developments in a number of emerging markets. We trust that they will provide a useful snapshot of the key features of these markets.

The sector is experiencing significant growth, with East Africa emerging as a significant oil and gas province as a result of the large gas finds in Mozambique and Tanzania, and oil potential in Uganda and Kenya.

At PwC, we are watching developments in the industry, analysing changes from the perspective of how they will impact our clients and looking for ways in which we can best help companies anticipate and manage these dynamics. Our professionals understand the issues that our clients face, and have the knowledge and expertise to proactively address the challenges they face and recommend the best solutions.

Uyi Akpata
Africa Oil & Gas Industry Leader

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Oil & gas Africa

Oil reserves
132.4 billion barrels of oil
8.0%
of the world supply

Gas reserves
513.2Tcf
7.0%
of the world supply

Shale gas potential
15.7% (7.3% South Africa + **8.4%** North Africa)

Africa reserves as a % of global
Oil: **8.0%**
Gas: **7.0%**

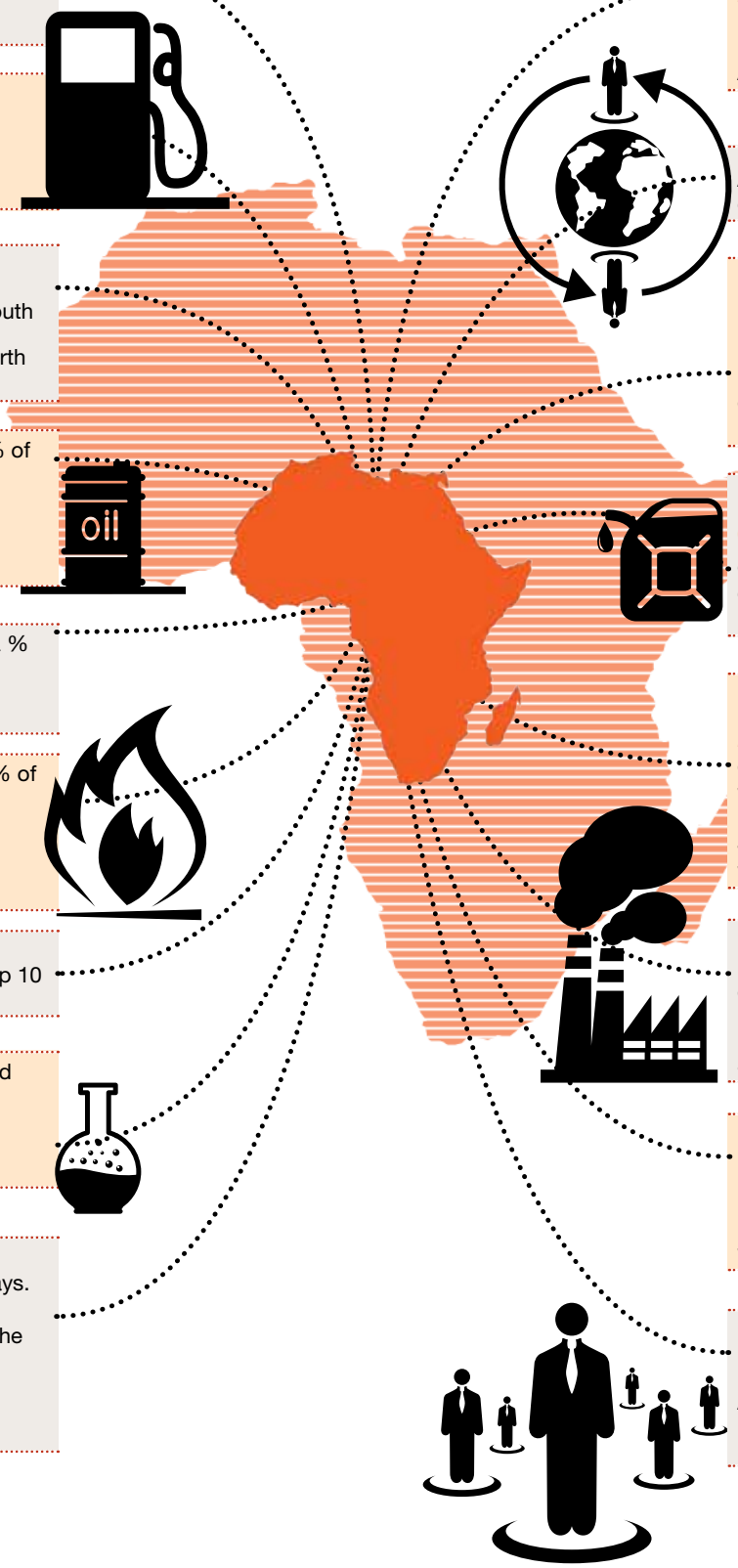
Africa production as a % of global
10.4%

Refining capacity as % of global
3.6% (actual throughput **2.9%**)

Flare gas
Africa has **5** of the top 10 polluters by volume

Unexplored/unlicensed blocks
±2 217 (2011 estimate)

Deals
A new deal every 4 days.
Total deal value of USD19.4 billion over the last two years
190 oil and gas transactions



Numerous countries are planning bidding rounds in **2013**, including Kenya, Mozambique, Nigeria, Uganda, Morocco and Angola.

Africa has **32** national oil companies

New gas finds in Mozambique
Estimated gas reserves of **127Tcf** and unproven estimated reserves of 152Tcf

LNG
62Mtpa
existing, 30Mtpa under construction and 100Mtpa planned/proposed

LNG trains
21 proposed LNG trains over the next decade will make Nigeria and Mozambique the 2nd and 4th largest exporters in the world

Potential industry investment with foreign direct interest
USD30 billion per annum

PwC offices
In **31** countries in Africa
In **158** countries worldwide

PwC staff
More than **8 000** in Africa
180 000 worldwide

Country profile: Namibia

- The new south western frontier
- Small companies first off the mark, international oil companies are following
- High hopes, but lacking a successful track record
- Next few months will be critical

Size:	824 000km^2
Population:	2.1 million
GDP:	USD13 billion (126th in the world)
Proven reserves:	Gas 2.2Tcf Oil 0 million bbls

Key players

BP plc	Petroleo Brasileiro SA (Petrobras)
Arcadia Petroleum	Galp Energia
Repsol	Eco Atlantic Oil & Gas Inc
Maurel & Prom	Chariot Oil & Gas
Tullow Oil plc	HRT Participacoes em Petroleo SA Tower
Serica Energy plc	

Recent developments

- Namibia is seen as Africa's newsouth western frontier, but the Kudu gas field, with 1.3Tcf of gas discovered in the early 1970s, remains stranded.
- Only 15 wells have been drilled to date.
- 18 new wells are planned to be spudded over the next four years.
- All offshore blocks are in deep and ultra-deep water, requiring semi-submersible rigs or drill ships for exploration.
- Geology shows similarities to the pre-salt Santos basin in Brazil, leading to positive speculation on the hydrocarbon potential.
- Despite recent well abandonments by Chariot, there is significant interest in Namibia from companies like BP, Repsol, Petrobras and HRT.
- HRT recently farmed out part of its stake to Galp Energia.
- HRT-owned prospects in Namibia are estimated at 7.4bboe, although recent results from the first well drilled indicate that the source rocks would not be commercially viable.

Regulatory environment

- The Ministry of Mines and Energy (MME) adopted an open licensing system in 1999 for reconnaissance, exploration and production licences issuing on average two a year between 2005 and 2010.
- The Petroleum Act and Income Tax Act govern VAT, taxation issues, royalties, administrative and provision requirements.
- Namcor is the national oil company.

Executive summary

Reserves and production

Africa currently supplies about 12% of the world's oil and boasts significant untapped reserves estimated at 8% of the world's proven reserves. These reserves have increased in the last two decades from 5.8% in 1991 and 7.6% in 2001 and this trend is anticipated to continue.

From proven oil reserves of 132 billion barrels, Africa produced nine million barrels of crude oil per day (bbl/d) in 2011. Eighty-one percent of this oil production came from Nigeria, Libya, Algeria, Egypt and Angola in 2011.

The political unrest in North Africa in 2011 resulted in a loss of production of more than a million bbl/d. It is expected that 2012 production figures will reflect a rebound with production up to pre-2011 volumes of 10 million bbl/d, as Libya has brought production back on stream.

Africa has proven natural gas reserves of 513 trillion cubic feet (Tcf) with 91% of the annual natural gas production of 7.1Tcf coming from Nigeria, Libya, Algeria and Egypt.

Growth and development

Overall, the booming oil and gas industry is seeing greater interest in all regions, including frontier states such as Namibia, Togo, Liberia and areas where exploration and production had been diminishing over the last few years. This includes countries such as Ghana, Côte d'Ivoire and South Sudan. The crown jewels are, however, the new players on the east coast, particularly Mozambique and Tanzania.

Africa is seeing continued growth, with East Africa emerging as a new source of gas and oil. Significant gas finds in excess of 127Tcf in Mozambique have created the potential for another African super player. With further exploration and development it is expected that Mozambique could overtake Nigeria and Algeria as the African country with the largest gas reserves.

Mozambique is expected to become the second-largest exporter of Liquefied natural gas (LNG) by 2025, as the country steps up production from 10 million tonnes per annum (Mtpa) in 2017 to an envisaged 50Mtpa. Access to the lucrative Asian LNG market has significant economic benefits for the East African region and could act as a catalyst for meaningful economic development.

Developments in Ghana have demonstrated the possibilities within Africa to the world. The Jubilee field was hailed as the fastest ever deepwater development, taking just 24 months from development to production.

Africa is the last true oil and gas frontier with more than 4 200 oil and gas blocks identified. Almost half of these blocks are open, subject to force majeure or in the application phase. More than 80% of the 1 300 blocks in North Africa are licensed, while in sub-Saharan Africa it is estimated that only about 30% of 2 900 blocks are licensed. In the sub-Saharan regions it is evident that many new opportunities still exist, especially for exploration and production (E&P) companies that are willing to take risks.

There are many key opportunities within Africa due to:

- New exploration blocks being opened for competitive bidding;
- Port development and management;
- Pipeline engineering and construction (both subsea and onshore);
- Onshore and offshore maintenance;
- LNG plant engineering and construction;
- CO2 reduction and gas-powered 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 exchange inflows;
- Distribution of wealth – a benefit for all citizens;
- Infrastructure development mega projects; and
- New refinery development or upgrades.

The challenges

The challenges facing oil and gas companies operating in Africa are diverse and numerous. For example, Shell reports that criminal gangs are targeting, damaging and bunkering an estimated 150 000bbl/d in Nigeria. Political interference, uncertainty and delays in passing laws, energy policies and regulations into law are stifling growth, development and investment in a number of countries around Africa.

Many of the challenges facing the African oil and gas industry remain. Strategic and long-range planning is extremely important in today's uncertain environment. Oil and gas companies must control costs, while continuing to weigh up the risks and benefits of new projects, new products and evaluating how much capital to invest. Behind such decisions lie a host of regulatory, safety, environmental and political stability considerations. In many African countries oil and gas policies are being reviewed and attempts to increase government take and local content are being introduced.

Governments in Africa are increasingly requiring E&P companies to supply gas as an energy feedstock for local power generation, industry and for general consumption, prior to exporting the products. Local beneficiation of hydrocarbon resources is being prioritised to ensure development for the benefit of the local population.

This requires additional development of infrastructure and potentially longer lead times before production can commence, as has been demonstrated by the situation in Uganda.

The significant growth in East Africa highlights a shortage of trained oil and gas workers in the industry. While oil and gas companies would like to see a relaxation of local content regulations, governments are instead making localisation regulations and policies more stringent. Investments in skills development and training are therefore an ongoing requirement.

The 2013 PwC Shale Oil report suggests that shale oil could significantly change the export market for African oil.

President Obama's February address to the nation also indicated that the US could become self-sufficient with locally-produced oil. This would hit Nigeria particularly badly, as 33% of its exports go to the US. Africa will need to look to the growing markets in the East such as China and India for uptake of its oil.

Country profile: Mozambique

- Mozambique will become the fourth-largest exporter of LNG (according to OECD) globally and second-largest in Africa after Nigeria
- Africa's new hope with proven gas reserves increasing yearly
- Anadarko expects the first two five-million-tonnes-per-annum LNG liquefaction trains to be commissioned by 2018
- Close to lucrative Asian markets

Size:	799 000 km^2
Population:	23.5 million
GDP:	USD26.2 billion (120th in the world)
Proven reserves:	Gas 127Tcf Oil 0 million bbls

Key players

Anadarko	Inpex	Mitsui
PTTEP	Petronas	Galp Energia
Sasol	CNPC	Tullow Oil plc
Wentworth Resources	Maurel & Prom	Eni
Statoil	Videcon	

Recent developments

- In 2012, PTTEP outbid Shell for Anadarko's farm-out of Area 1 in the Rovuma Basin – 10% onshore and 8.5% offshore blocks for around USD1.7 billion.
- Sasol continues to be the only exporter of gas.
- Anadarko has had 11 successes in Block 1, leading to estimated reserves of 35-65Tcf. Further appraisal and drilling is planned in the Ocra, Trawler and Barracuda prospects in 2013.
- In 2011, Eni announced its massive find in Block 4 in the Mamba Complex. This followed the success of four wells. Reserves are at 70Tcf.
- Statoil was due to commence exploration activities in April 2013.
- Petronas has started appraisal drilling in Blocks 3 and 6 and has recently gained approval to farm-out 40% to Total.
- In December 2012, heads of agreement were reached between Anadarko and Eni to facilitate a work programme in which the two operators will jointly plan and construct common onshore liquefaction LNG facilities while conducting separate, yet coordinated, offshore development activities.
- Anadarko has contracted for two five-million-tonnes-per-annum LNG liquefaction trains, followed by a stepped approach with two trains following every two years up to a possible 10 trains.
- The 100th well will be drilled in Mozambique in 2013.
- The Petroleum Law is under revision and is expected to introduce alterations in the engineering, procurement and construction requirements (EPC's) as well as considering Coal bed methane (CBM) reserves as part of the gas sector.

Regulatory environment

- The fifth competitive bidding round is expected in the third quarter of 2013.
- Mozambique has numerous laws that affect the industry from the Petroleum Law, regulations on petroleum operations, laws on public-private partnerships, petroleum tax laws, income tax legislation, regulations on expatriate employment and VAT regulations.
- The proposed new petroleum law, which aims to make the legal framework transparent for investors, awaits parliamentary approval.
- Engineering, procurement and construction (EPC) contracts are issued for 30 years from date of approval of the development plan and can be renewed upon request. EPC contracts can be cancelled in the case of failure to pay tax on demand, bankruptcy and serious breaches of contract.
- Joint operating agreements (JOAs) are common, but require regulatory approval.
- Empresa Nacional de Hidrocarbonetos (ENH), the national oil company, has 10-15% free participation in all blocks.
- Engineering, procurement and construction contracts are issued by the regulator, the Instituto Nacional de Petroleos (INP), with bidders only succeeding if they meet the strict requirements desired by the government.

Developing the business

Q: What do you see as the biggest challenges in developing an African oil and gas business?

The major challenges identified by respondents in our consultation with the oil and gas industry have remained largely unchanged with the top four issues in 2010 continuing to remain the biggest challenges in 2012.

Poor infrastructure and an uncertain regulatory framework were the top two challenges identified by new emerging players/markets, especially in Uganda, Ghana, Tanzania, Nigeria and Kenya.

Governments around Africa are reviewing or developing their energy policies. Many countries are investigating changes in the government take, taxation regulations and state participation.

The Nigerian Government has been in the process of implementing the Petroleum Industry Bill since 2006 and it has been estimated that uncertainty around it has cost the country USD50 billion in capital projects.

Uncertainty exists in a number of other countries where energy policies and regulations are being developed and/or revised. The Tanzanian Government is investigating policies to ensure local benefit in preference to the export of natural gas. The Ugandan Government is undertaking a similar process.

Uncertainty has also arisen as a result of political interference and a lack of transparency about procedures particularly with regard to the awarding licences and production agreements.

Top six constraints to development identified by respondents

	2012	Movement	2010	Movement
1	Poor physical infrastructure	▲	Uncertain regulatory framework	▼
2	Corruption	▲	Poor physical infrastructure	▲
3	Uncertain regulatory framework	▼	Corruption	▲
4	Lack of skilled resources	►	Lack of skilled resources	►
5	Local content requirements	▲	Set-up costs	▼
6	Set-up costs	▼	Access to funding	▼

Base: 37

South Africa has until recently been regarded as having a transparent and independent process with the Petroleum Agency of South Africa (PASA) managing the licensing and marketing of local acreage and assets. However, proposed amendments to the Mineral and Petroleum Resources Development Act will see its functions devolved to the Department of Energy (DoE). This could create an uneven playing field for competitors and allow for state interference.

The perception that corruption is one of the most significant challenges remains, despite the development of new policies and regulations in many jurisdictions. Energy policy reviews and updates of legislation in many countries, in particular Uganda, Tanzania and Nigeria, are intended to provide a more transparent process to reassure international investors that corruption is being addressed.

A government taskforce in Nigeria recently claimed that the Nigerian National Petroleum Corporation (NNPC) could not account for USD29 billion due to alleged natural gas price fixing scams. Uganda has also not been without frequent allegations of corruption in the contracting process. It is clear that corruption needs to be dealt with in a tough manner across Africa, with a zero tolerance policy and the prosecution of individuals to rid the continent of this negative perception. Reputational and contractual transparency within countries will decrease their above-ground risks.

Lack of skills and localisation, in fourth and fifth place respectively, indicate that people skills are a challenge for E&P companies as they are required to comply with national participation and local content obligations contained in production sharing agreements (PSAs) and legislation.

Governments are requiring E&P companies to provide detailed training and recruitment plans and programmes that encompass technology transfer and training of locals in all phases of their extraction activities.

Significant effort is required for E&P companies and governments to build capacity in the oil and gas sector through formal and industrial training.

Factors impacting business over the next three years

As in prior industry reports and surveys, the factor that is seen to have the most significant impact on respondents' businesses is the commodity price of oil and gas. Beyond this, local content requirements and people skills weigh most heavily on executives minds, with 45% of respondents anticipating these issues will have a significant impact on their operations in the next three years.

Regulatory compliance has seen the largest fall, declining from second place to fourteenth. This is due to the fact that while there is still uncertainty, oil and gas companies have come to expect such requirements and have therefore made provision to include these in their business and strategic plans.

Tax disputes still remain a concern for businesses in the industry.

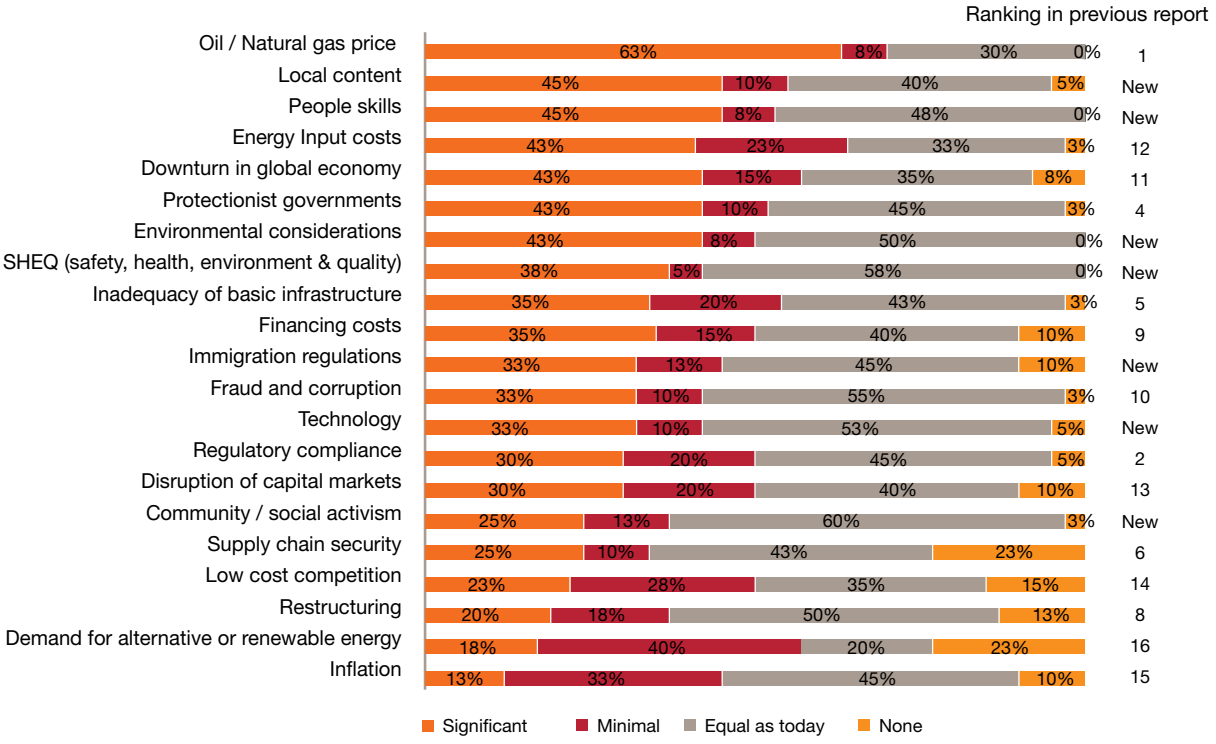
Training or recruitment of local talent at the levels required by legislation and government quotas is a significant area of concern that companies are grappling with. The situation is most difficult when it comes to filling senior management positions, as it takes many years to gain the required knowledge and experience to perform at this level.

Companies have identified the general skills gap and lack of local skills as universal problems across their businesses. While they continue in their efforts to address these issues, they are aware that the way they do business in Africa needs to change.

In 2010, the African oil and gas industry appeared to be immune to the downturn in the global economy. This was not the case in 2012, as executives identified it as the fifth-most likely factor to impact their business.

Companies are looking more actively at streamlining their businesses in the tough economic climate, with a greater focus being placed on controlling energy and operating costs. Energy input costs has moved to third on the impact priority list, up from twelfth in our 2010 survey.

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



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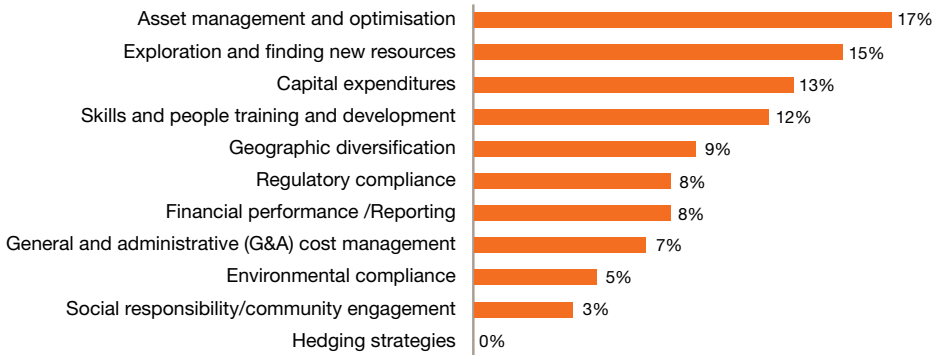
Top strategic focus areas over the next five years

The top strategic focuses for oil and gas companies are asset management and optimisation. Capital expenditure, in third place, is also a prominent focus. This suggests that companies are spending a lot of their resources on both new and old assets, as they aim to control costs with prudent capital expenditure, as well as extending and optimising the assets they already own. This focus may also be seen as a consequence of tough economic conditions and the need for tighter cost control.

Finding new resources and geographic diversification was the second-most significant focus area identified. This is positive news for Africa, as it indicates that companies are not only keen to do business in Africa, but also willing to invest more in the region.

The fourth-most import strategic focus area is skills and people development, which is not surprising given that requirements for local content and job creation being the second and third-highest identified areas that would affect the respondents businesses over the next few years.

Figure 2: Top strategic focus areas over the next five years



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Country profile: Uganda

- Regulatory uncertainty is delaying commencement of production
- USD4.6 billion budgeted spend for 352km pipeline
- 120 000bbl/d refinery going ahead
- New legislation aimed at protecting Uganda from the resource curse

Size:	241 000km^2
Population:	33.6 million
GDP:	USD50.6 billion (95th in the world)
Proven reserves:	Gas 0.5Tcf Oil 2500 million bbls

Key players

Tullow Oil plc	Neptune
Total SA	CNOOC
Heritage Oil	

Recent developments

- Tullow's long delayed farm-out to Total and CNOOC for USD2.9 billion was eventually completed when the government signed the production sharing agreements in February 2012.
- 80 wells drilled, with 20 fields containing recoverable oil and gas.
- Dominion Petroleum and Tower Resources divested in 2012/13 after unsuccessful exploration campaigns.
- Recent contractual agreements, tax disputes, infrastructure setbacks, delays in passing regulations and accusations of government interference and allegations of corruption have delayed the development of Uganda's potential.
- The government insists its cautious approach is to ensure good governance and proper revenue management while also reducing the perceived country risk.
- 14 pipeline bids were received for the 352km reversible flow heated oil product pipeline between Kampala and Eldoret in Kenya for Uganda's waxy crude.
- The government is going to proceed with plans to invite bidders to build a 120 000bbl/d refinery after the successful passing of the Petroleum Refining, Conversion, Transmission and Midstream Storage Bill. It is hoped production of 20bbl/d will start in 2017 and ramp up to 60 000bbl/d, then 120 000 bbl/d.

Regulatory environment

- The Ministry of Energy and Mineral Development (MEMD), through the Petroleum Exploration and Production Department (PEPD), promotes and regulates the oil and gas industry.
- The next bidding round is expected to offer 13 blocks in 2013.
- The Ugandan Government passed a number of laws and regulations in 2012, including The Oil and Gas Revenue Management Policy, Petroleum (Exploration, Development and Production) Bill, the Petroleum (Refining, Gas Processing and Conversion, Transportation and Storage) Bill and the Public Finance Bill.
- The passing of the Petroleum Refining, Conversion, Transmission and Midstream Storage Bill in Feb 2013 has unlocked the moratorium on new licensing rounds. The new National Oil and Gas Policy proposes the establishment of the Uganda National Oil Company (NATOIL) and the Petroleum Authority of Uganda (PAU), which will regulate and handle all commercial aspects of the industry.

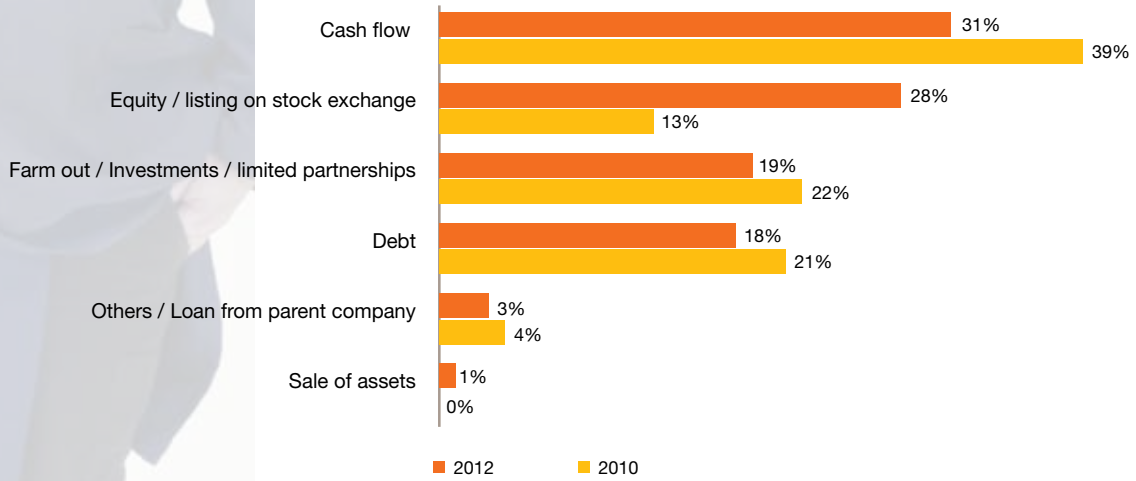
Financing

When asked to identify their primary source(s) of financing for business operations in the next 12 months, respondents indicated that the lingering effects of the financial crises have reduced access to 'normal' debt and that their companies will predominantly be relying on their own cash flows to fund their businesses.

The biggest shift in sourcing funding has been for companies to look to the market to raise equity finance. In 2010, a third as many respondents indicated that funding would come from equity compared to cash flow. In contrast, in 2012 almost as many respondents said that funding was as likely to come from cash flow as it was from equity.

Equity has become the preferred option as it is easy to come by. While investors are looking at long-term investments, E&P companies require capital that will only yield cash flow/returns later. Oil and gas companies seem to be taking advantage of positive investor sentiment towards the oil and gas industry in Africa's long-term prospects. An advantage of equity financing is that it allows companies to have cash on hand to finance their expansion plans.

Figure 3: Primary source(s) of financing for business operations in the next 12 months



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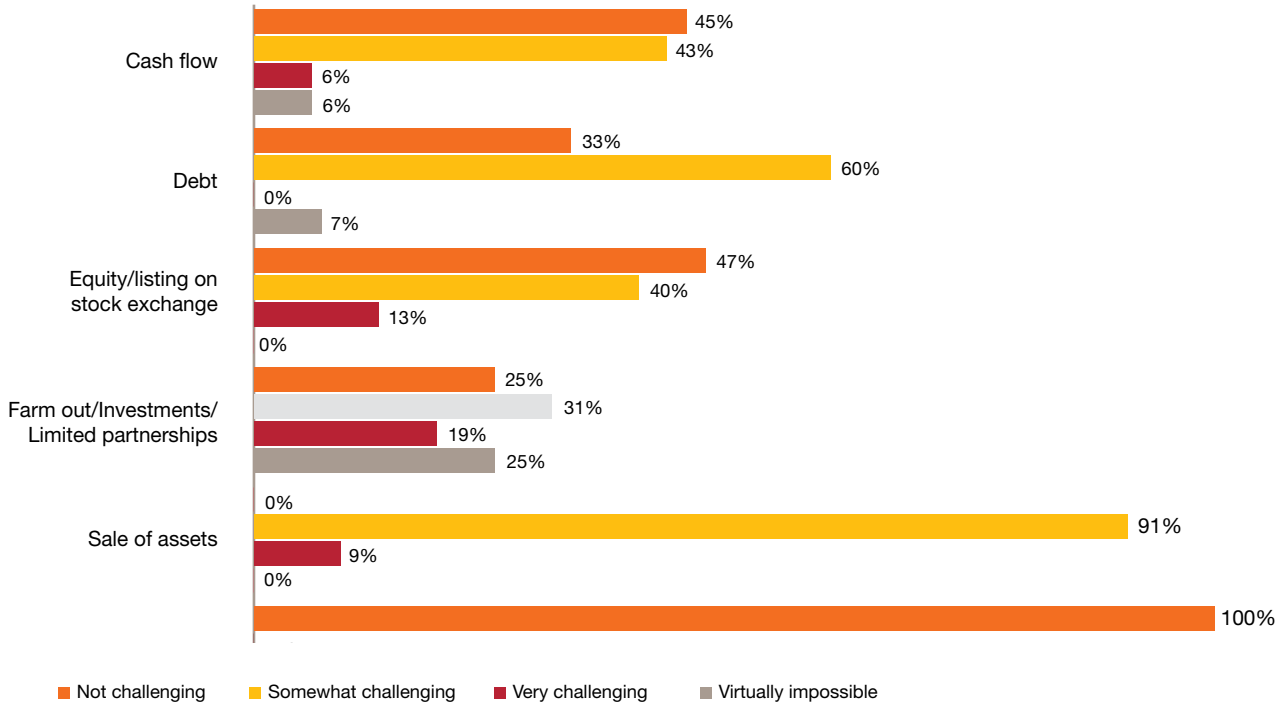
The challenge of securing finance

The vast majority of respondents expect sourcing funding from cash flow, debt and equity finance to be either 'not challenging' or only 'somewhat challenging'. In contrast, 'farming out/investments and limited partnerships', were recognised as being far more challenging, with more than 40% of respondents predicting that securing such finance would be 'very challenging' or 'virtually impossible'.

However, while the perceived degree of difficulty in executing farm-outs remains high compared to other funding methods, the outlook has improved since our last survey – down a fifth from 55% in 2010 to 44% in 2012. Though this percentage remains comparatively high, the improvement suggests that even during the global economic downturn, farm-out funding for exploration and production in Africa has become easier to secure.

Developments in Nigeria may also have a significant impact on the funding environment for Africa as a whole. Indications are that political and industry pressure could cause Nigeria's Petroleum Industry Bill (PIB) to be only partly ratified. This may be bad for Nigeria as international oil companies and financiers will look at funding other capital projects and shift more investment into the 'new frontier' countries that have emerging or fledgling oil and gas industries. These include other countries in the Gulf of Guinea and those on Africa's East coast.

Figure 4: Level of difficulty expected in securing financing



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Africa has seen a continued investment and deal activity over the last year or two, with particular interest in the emerging oil and gas markets of West and East Africa. The table is on the next page, provides a summary of some of the countries and players involved and demonstrates the extensive interest being shown in exploration activity across Africa.

It should also be noted that there is significant focus on emerging exploration areas, such as South Africa, Namibia and Kenya, in addition to areas where reserves have already been proven.

Farm-in/out activity is also being driven in part by the need for risk sharing and funding of continuing exploration and development activities. This has made the industry one of the biggest sectors for merger and acquisition activities in Africa. On average, a deal to the value of USD100 million was struck every four days during 2011 and 2012.

More deal activity can be expected as new license rounds are opened up and as regulatory and policy uncertainty is removed.

The oil and gas industry is also starting to be used by governments as a way of strengthening their financial markets and banking institutions. Angola has drafted legislation requiring oil firms to open accounts with domestic banking institutions, from which all payments related to their oil operations must be processed.

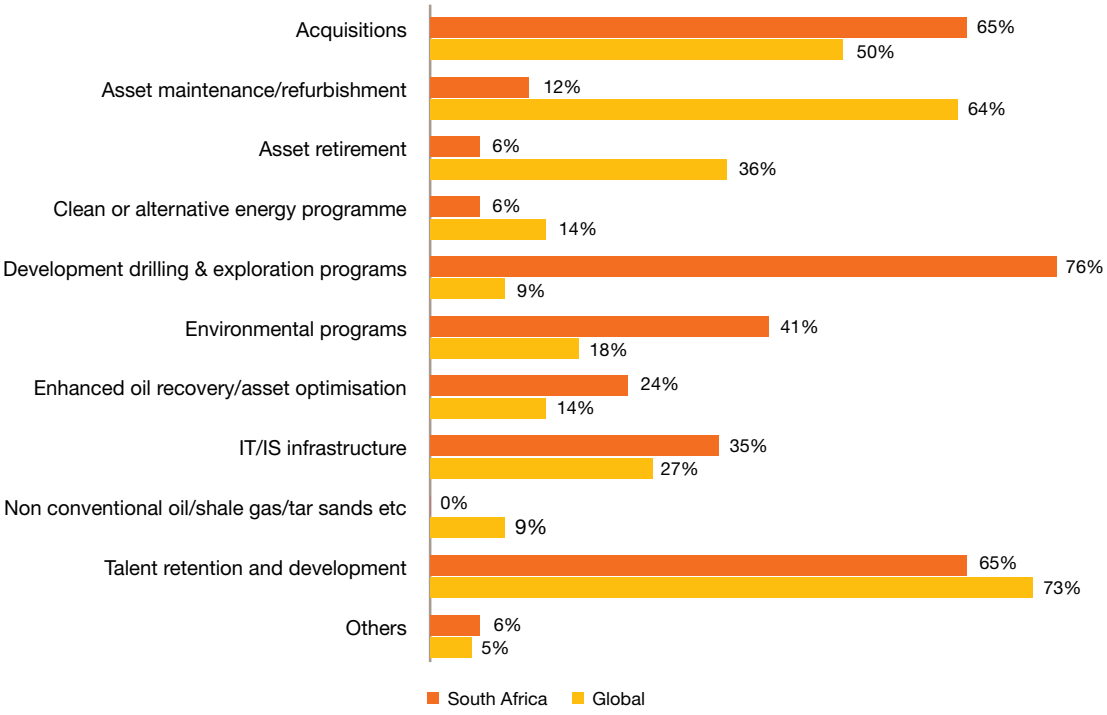
Meanwhile, Mozambique is considering requiring all oil and gas companies currently operating, or those wishing to extract gas and oil, to be listed on Mozambique's stock exchange. The objective is to strengthen their economies against foreign currencies and to get companies to raise capital in local markets.

Oil and gas farm in/out investment in Africa

Country	Original Owner	Investor
Ghana	Sabre Oil & Gas Holdings	PetroSA
	Tap Oil	Afex Oil, Vitol Upstream, Rialto Energy
Namibia	HRT	Galp Energia
	Serica Energy	BP
South Africa	Forest Oil	Sunbird Energy
	PetroSA	Cairn India
	Impact Oil & Gas	ExxonMobil
	PetroSA	Anadarko
	Falcon Oil & Gas	Chevron
Mozambique	Statoil	Tullow Oil
	Cove Energy	PTT Exploration and Production
	Petronas	Total
	Eni	China National Petroleum Corporation
Kenya	Cove Energy	Total
	Africa Oil	Marathon and Tullow Oil
	Africa Oil	Tullow Oil
	Admantine Energy Ltd	Bowleven
Nigeria	Total	Sinopec
Ethiopia	Africa Oil	New Age
	Africa Oil	Tullow Oil
Equatorial Guinea	Vaalco	Petronas
Liberia	African Petroleum	PetroChina
Morocco	San Leon	Cairn Energy Ltd
Tanzania	Petrobras	Shell
Sierra Leone	Talisman	Lukoil

Source: PwC analysis

Figure 5: Investment drivers



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As would be expected, 76% of E&P respondents said that they would be investing in development drilling or exploration programmes.

E&P and other respondents (which includes service companies, downstream operators and refiners) both indicated that two of their top three areas for investment were in acquisitions, talent retention and development.

Non-E&P respondents indicated that their second priority after talent retention was asset maintenance and refurbishments, as they seek to extend the life of their assets and maximise the benefit from ageing assets. This is also reflective of the pressures on refining and downstream margins being experienced by the industry globally.

Overall, talent retention and development was considered the major focus area in which companies would be investing. This correlates with the factors most likely to impact business in the next three years, depicted in Figure 2, where local content and people skills were identified among the top three issues.

More than 50% of respondents indicated that they will be looking at expansion through acquisition. Given this positive outlook, we believe the industry can look forward to an exciting and dynamic future in Africa. But, we also expect that the competitive landscape will change, with new market entrants seeking a share of Africa's significant growth potential.

It is noteworthy that relatively low levels of investment in unconventional oil and gas plays are expected in the next few years. As this segment of the industry develops, we expect to see an increase in investment, led initially by shale gas developments in South Africa and Algeria.

Not surprisingly, only 6% of E&P respondents expect to invest in clean or alternative energy in the next few years, choosing to retain their focus on their core business rather than diversifying into alternative energy.

Environmental and clean and alternative energy programmes, which had been recognised as a fairly important investment area in 2010, had declined threefold by 2012. We believe that sentiment and expectations of investments required were influenced by the Deepwater Horizon incident in the Gulf of Mexico at the time of our previous survey. While companies invested in SHEQ subsequent to the incident, there is a view that anticipated regulations have not been as far reaching as initially expected.

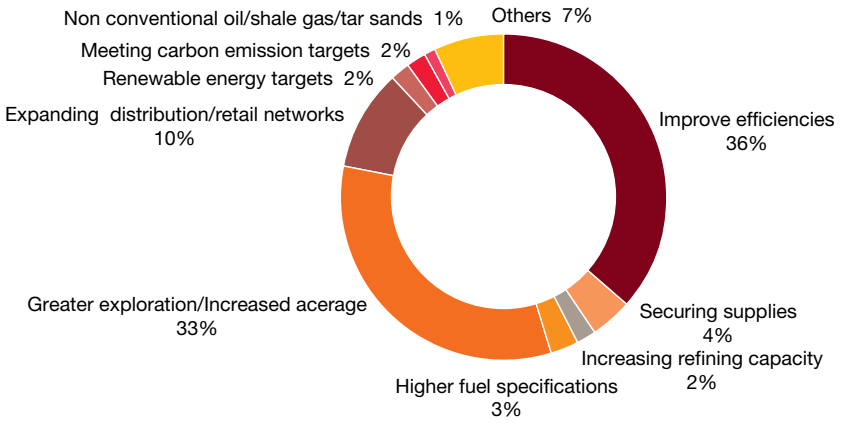
Apart from South Africa, where cleaner fuel regulations will be introduced, only 5% of respondents indicated that their companies would be investing significantly in environmental initiatives over the next few years.

The two key investment drivers over the next three to five years were identified as 'improving efficiencies' (37%) and 'greater exploration or acquiring greater acreage' (33%). Discussions with respondents revealed that most anticipate a high level of competition for acreage. This seems to be being spurred on by new finds across all regions of African, including countries such as, Angola, Ghana, Kenya, Mozambique, Tanzania and Uganda. Further acreage has also been made available during recent bidding rounds in Sudan, Tanzania, Egypt, Namibia and Algeria, and there will be more new acreage up for grabs in East Africa in 2013.

In 2011 it was estimated that there were a total of 4 161 blocks available of which 1 944 had been licensed, leaving 53% of the blocks still open. The greatest number of open blocks lie in sub-Saharan regions, with only about 30% having been licensed off compared to more than 80% in North Africa.

The proportion of respondents that recognised the achievement of renewable energy and carbon emissions targets as an investment priority declined by three-quarters, from 17% in 2010 to just 4% in 2012. This suggests that expected regulatory requirements have had or are expected to have little impact on those oil and gas companies making significant investments in Africa.

Figure 6: Key investment drivers over the next 3-5 years



Base: 37

Country profile: Kenya

- Kenya has been a hive of activity over the last few years
- First commercial oil found in 2013
- RFP issued for 352km pipeline
- Need to harmonise PSCs and tax legislation

Size:	580 000km^2
Population:	43.0 million
GDP:	USD76.2 billion (84th in the world)
Proven reserves:	Gas 0.0Tcf Oil 0 million bbls

Key players

Tullow Oil plc	Total	Cove Energy
Anadarko	Apache	Camac
BG	CNOOC	African Oil

Recent developments

- Anadarko acquired the first offshore blocks in 2009. Other E&P companies have followed.
- Eight new deep water blocks were gazetted in 2012.
- Apache spudded the first offshore well in 2012 and encountered 52m of natural gas in three pay zones, which are still being appraised.
- The focus of drilling has been onshore in the East African Rift Valley basins, which have similar geology to that found in Uganda.
- Tullow announced in February 2013 that its Twiga South-1 well in onshore area Block 13T had found commercial oil that flowed at 2 812bbl/d and could reach 5 200bbl/d.
- 14 pipeline bids were received for the 352km reversible flow heated oil product pipeline for Uganda's waxy crude between Kampala and Eldoret (20 year build-own-operate transfer agreement).
- Six blocks are planned for 2013 licensing round.

Regulatory environment

- Kenya, unlike its neighbours, offers acreage through direct negotiations with the National Oil Company of Kenya (NOCK).
- Production sharing contracts (PSC) require E&P companies to surrender 25% of their onshore blocks after three years offshore and offshore blocks after three years.
- The Ninth Schedule of the Income Tax Act governs VAT, taxation issues, royalties, administrative and provision requirements.
- Kenyan energy legislation is in the process of being drafted.
- The key legislation that impacts E&P companies are the Ninth Schedule of the Income tax act (tax laws are to be revised shortly, with input from the oil and gas policy document), VAT Act and the East Africa Community Customs Management Act (EACCMA). All of these acts have special provisions for transactions involving E&P companies.
- Rhetoric by politicians suggests that there will be greater participation by the government in future, with higher revenues and localisation of the industry as well as the possibility of partial resource nationalisation.
- At present there is a need to harmonise PSCs and tax legislation.

Combatting fraud & corruption

Q: Do you have compliance programmes in place to prevent or detect possible instances of fraud and corruption? How effective do you believe these programmes are?

No less than 95% of respondents indicated that their companies have anti-fraud and anti-corruption programmes in place. Of these, only 55% believe that the programme is very effective at preventing or detecting fraud and corruption.

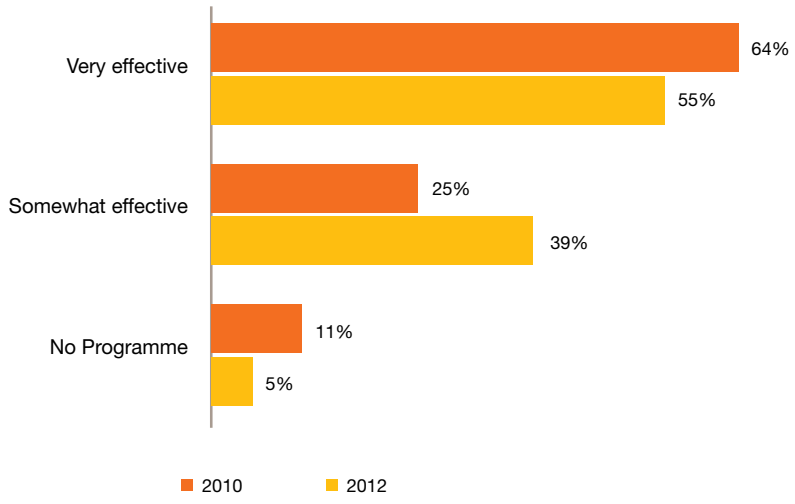
Although respondents were more likely to have anti-corruption programmes in place in 2012 than at the time of our previous survey, the effectiveness of these programmes needs improvement, since management acknowledges that their anti-corruption programmes have not been as effective as they would have liked. A recent global PwC anti-corruption survey also found anti-corruption/fraud programmes to be largely ineffective.

However, these results are surprising given that corruption has been identified as the third-biggest challenge to the development of Africa's oil and gas industry.

This perception is also in line with the Transparency International's Corruption Perception Index, in which certain African nations are recognised as being some of the most corrupt globally.

Countries that sell all of their crude to private commodity companies rather than directly to refineries have potential for greater fraud.

Figure 7: Compliance programme effectiveness



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Country profile: South Africa

- New interest offshore with new entrants
- The game changer with shale gas estimated reserves of 485Tcf
- Coal bed methane to take off
- Euro V standards to change refining landscape

Size:	1 219 000km^2
Population:	51.8 million
GDP:	USD578.6 billion (26th in the world)
Proven reserves:	0.4Tcf Oil 14.2 million bbls

Key players

PetroSA	Falcon Oil	Sunbird
Shell	Anadarko	Kinetiko Energy
Anglo American	Forest Oil	Cairn India
ExxonMobil	BHP Billiton	
Chevron	Sasol	

Recent developments

- Greater interest by international oil companies and independents offshore.
- More than USD1 billion to be spent on exploration as more than 10 companies granted exploration licences. With ExxonMobil and Anadarko acquiring deepwater rights on the East Coast and BHP Billiton, Cairn India and Sunbird Energy on the West Coast.
- South Africa has been estimated to have the fifth-largest shale gas reserves in the world. Many hurdles exist, but the first step towards development occurred in September 2012 when the government lifted its 18-month moratorium on shale development.
- Coal bed methane reserves are estimated to be 10-30Tcf.
- Euro V standards may bring considerable change to the refinery landscape since it could cost USD4 billion to meet the required standards. Uncertainty exists about how these costs may be recovered.
- PetroSA is still evaluating the construction of its proposed crude oil refinery at Coega.

Regulatory environment

- The Department of Minerals and Energy adopted an open licensing system in 1999 for reconnaissance, exploration and production licences, issuing on average two a year between 2005 and 2010.
- The Petroleum Act and Income Tax Act govern VAT, taxation issues, royalties, administrative and provision requirements.
- PetroSA is the national oil company.
- The most common forms of petroleum contracts in South Africa are defined by the Mineral and Resource Development Act of 2004 (MPRDA), which is in the process of being amended to include:
  - Reconnaissance permits – 12 months non-exclusive;
  - Technical cooperation permits (TCPs) – 12 months exclusive desktop study, exclusive rights to apply for exploration rights;
  - Three-year exploration rights – exclusive, transferable and renewable for a maximum of three periods of two years each; and
  - 30-year production rights – exclusive, transferable and renewable. To be governed by a signed non-standard production sharing contract between the operators and the state.

Health, safety and enviroment

Q: What percentage of capital expenditure (capex) do you anticipate spending on environmental issues?

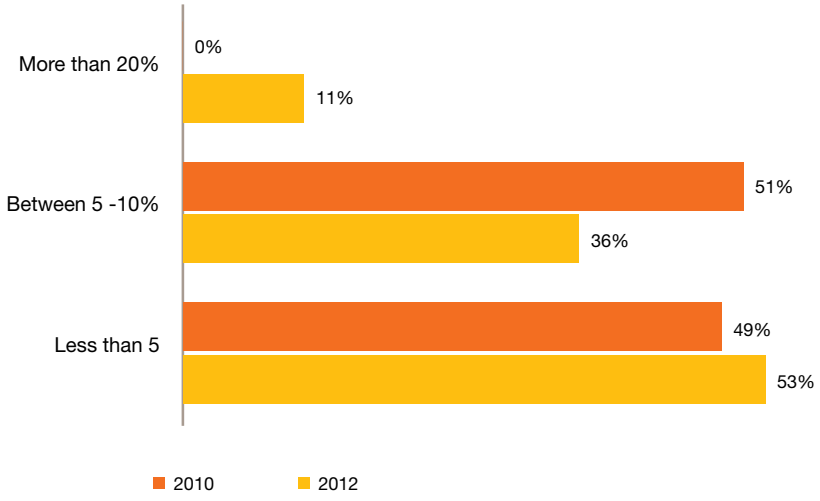
Commitment to environmental expenditure has declined since 2010, with no respondents committing more than 20% of their forecast capex to environmental concerns.

Expenditure is driven by a combination of internal company policies and industry standards as well as the need to comply with increasing environmental legislation in many African countries. For example, Angola has introduced a zero gas flaring policy and in South Africa, cleaner fuel standards have been announced.

Public and official concern about the exploration for shale gas by means of hydraulic fracturing has highlighted the environmental risks associated with the industry and is expected to result in more stringent environmental regulation requiring additional expenditure on environmental management and protection by oil and gas companies.

At the same time, The United Nations Environment Programme (UNEP) estimates that it will cost over USD1 billion to start the clean-up process in the Niger Delta.

Figure 8: Capex expenditure on the environment



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Q: How have current or proposed safety, health, environment and quality regulations affected capital project investment decisions?

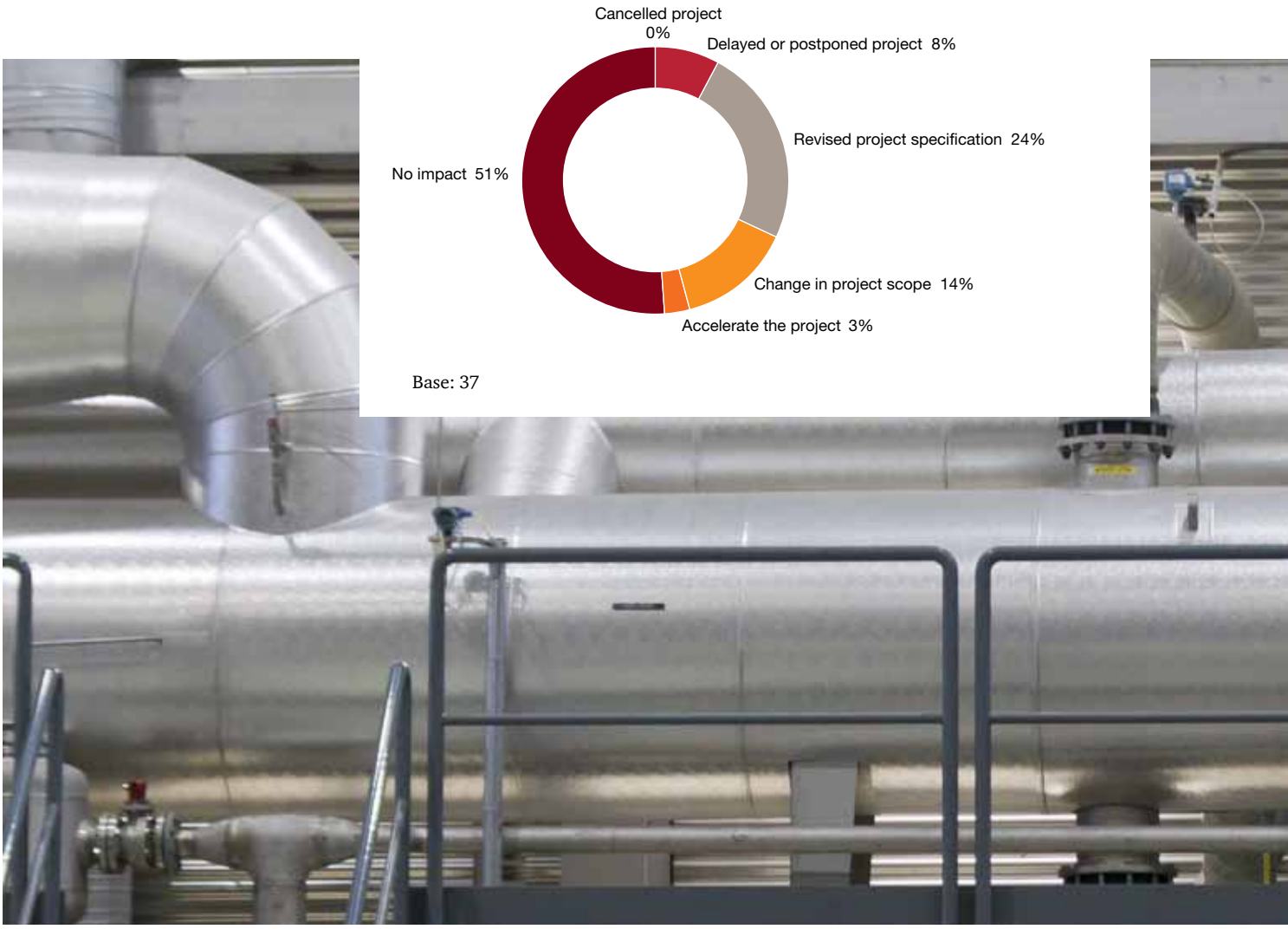
More than half of respondents stated that current and proposed environmental regulations did not have any impact on capital project investment decisions. They also indicated that their companies' own environmental policies were more stringent than current regulations.

Almost a half of the respondents said that safety, health, environment and quality (SHEQ) regulations meant that the scope of their projects had to be changed or modified and that original investment decisions had to be delayed or accelerated as both local and international standards created extra costs and red tape.

In South Africa, shale gas developments have been delayed because of SHEQ considerations related to hydraulic fracturing and the perceived risk of ground water contamination.

The introduction of new or proposed regulations such as cleaner fuels and stricter government environmental regulations meant that 37% of the companies surveyed either revised or anticipate having to revise or change their project specification and scope. However, none of the companies surveyed said that they would cancel a project due to environmental, health or safety considerations.

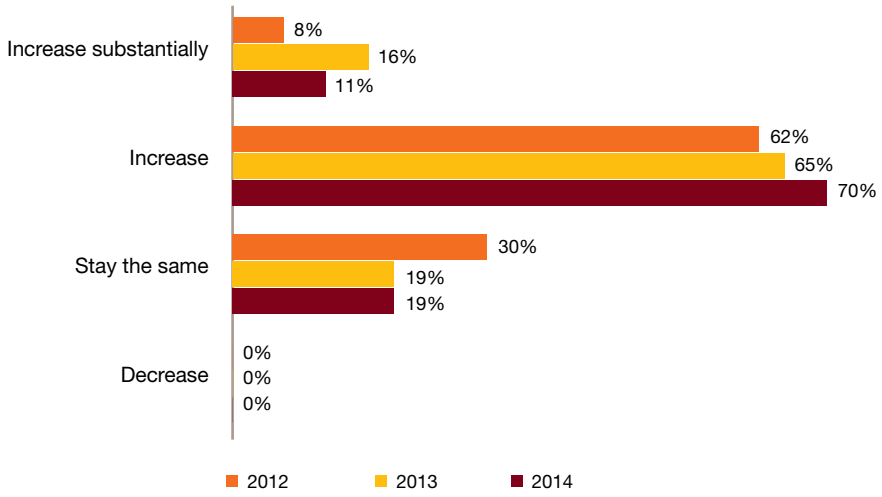
Figure 9: Impact of current/proposed SHEQ regulations on capital project investment decisions



Q: What do you expect of your SHEQ costs over the next three years?

Over 80% of respondents expect their SHEQ costs to increase in 2013 and 2014. One in six believe costs will increase substantially in 2013, primarily due to anticipated introduction of new regulations such as stricter implementation of gas flaring regulations, new legislation and cleaner fuel requirements in South Africa in 2014.

Figure 10: SHEQ cost expectations over the next three years



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Country profile: Tanzania

- Exploration activity taking off with large international E&P companies farming-in
- Uncertainty exists as new regulatory framework muted
- LNG exports expected from 2020. Concern this may be too late to access lucrative Asian market

Size:	947 000km^2
Population:	46.9 million
GDP:	USD73.6 billion (85th in the world)
Proven reserves:	Gas 20Tcf Oil 0 million bbls

Key players

Ophir Energy	Shell	Heritage Rukwa
ExxonMobil	Statoil	Maurel & Prom
BG	Pan African Energy	
Ndovu Resources	Petrobras	

Recent developments

- Oil and gas exploration took off in 2010 when a number of large international players entered the Tanzanian arena.
- The Ophir and BG consortium, with offshore Blocks 1,3 and 4, has an estimated reserve of more than 7Tcf.
- Statoil and ExxonMobil have indicated that Block 2 has reserves of 13Tcf, but this is likely to increase with the appraisal of Lavani-2.
- Uncertainty exists in the industry as E&P companies await legislative changes. It is expected that this will have an adverse effect on E&P companies, with increased state participation and demands for local energy needs to be met before the monetisation of assets in the form of LNG projects.
- Statoil recently awarded KBR the task of scoping out the viability of an LNG export terminal – Statoil does not anticipate LNG exports until 2020.

Regulatory environment

- The Tanzanian Petroleum Development Corporation (TPDC), the national oil company, has awarded acreage directly and through competitive licensing rounds.
- The next competitive licensing round will commence in May 2014 and will consist of nine blocks from partially relinquished acreage and newly demarcated deepwater acreage.
- The government has indicted that a large-scale review of the existing regulatory framework is taking place with changes in the countries energy policy expected. The proposed gas policy prioritises the domestic gas market over the export market.
- At present production sharing contracts override the law.
- Standardised production sharing contracts terms exist for oil and another for gas.

Developing local skills and business

Q: Approximately what percentage of your workforce are expatriates?

Given the trend towards greater local content, it was surprising that the percentage of the workforce made up of expatriates had increased from 10% to 25%. This was partly due to a greater percentage of the respondents being from the new developing markets of Uganda, Ghana and Tanzania where there is shortage of skills in the sector.

A quarter of respondents indicated that more than half of their workforce comprises expatriates, of which 34% were in senior and middle management positions and 25% specialist technical roles such as drilling supervisors.

Service companies in particular reported a higher than average proportion of expatriates in their workforces.

The high percentage of expatriates is a concern for businesses throughout the oil and gas value chain, as reflected by their identification of people skills and local content among the leading factors likely to impact their business in the next three years (see Figure 1).

Several countries, including Tanzania, Ghana, Nigeria, Uganda and Mozambique all have policies or are drafting policies in which localisation requirements will compel E&P companies to employ and train significantly more local staff. The localisation of the industry is usually stipulated in either legislation or production sharing agreements.

Only South Africa had expatriate figures below 10% in all categories, whereas Tanzania, Ghana and Uganda reported average values of 40-45% for all categories of workers. Among the emerging market, only Kenya has significantly lower expatriate numbers.

Figure 11: Percentage of expatriates in the workforce

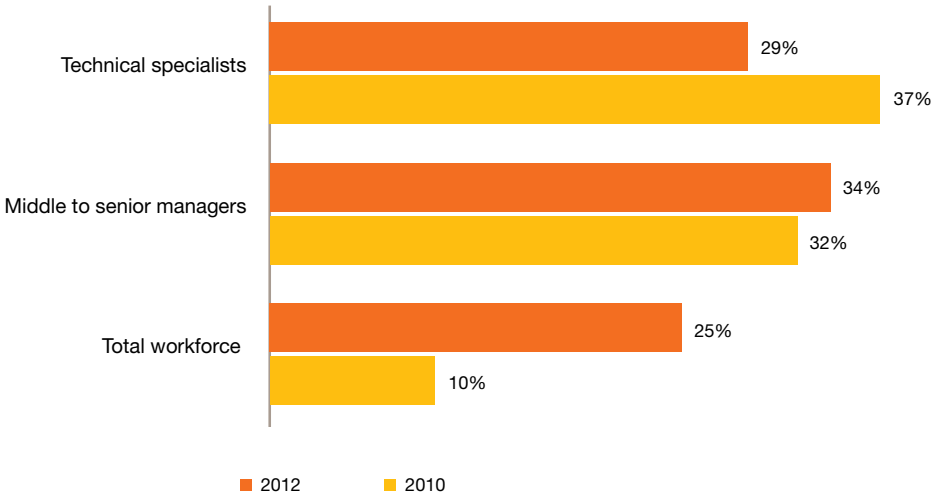
Q: What roles do expatriates fill in your organisation?

It seems that oil and gas companies are still struggling to develop their local workforces. We are encouraged that the majority of respondents have been able to deploy local staff into their middle and senior management and specialist technical roles. It is, however, of concern that the total workforce has not transformed and that local content requirements have not been fully addressed.

Local training, tertiary education and a greater push by companies and governments in developing local talent will be required for targets to be met.

The 2012 Hays Oil & Gas Global Salary Survey indicated that the highest average salary for expats in Africa was in Nigeria at USD123 000, followed by South Africa with USD95 000. In many cases, the average local salary was two to three times less than the average expat salary. This was in part due to local employees occupying less technical and senior positions.

Figure 12: Percentage of expatriates in different roles



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International oil companies contract out a large proportion of their activities, providing opportunities for local content development.

A study released in 2012 by the Center for Strategic & International Studies into the development of local content in emerging markets highlighted the challenges that local oil and gas companies face as a result of the high standards and quality requirements to which international oil companies have to adhere.

To ensure the development of local business, the study identified six major areas that would need to be addressed to enable local businesses to work effectively with the oil industry:

- Training programmes aimed at meeting the requirements of international oil companies;
- The provision of on-site business assistance local businesses;
- Information on international oil companies' procurement needs and a system to communicate this;

- The development of an enterprise development centre (EDC);
- Expanded access to finance; and
- Active participation between international oil companies, local businesses, EDCs and governments.

Examples showing the success of this approach to local development are outlined below:

- Angola

The Centro de Apoio Empresarial (CAE) was created jointly in 2005 by Sonangol, BP, Chevron, ExxonMobil and Total to serve as an enterprise development centre. The CAE's aim was to create a functioning and sustainable market of local businesses to meet the needs of international oil companies. It provides business training, financial analysis, procurement support and an access to finance programme. Up till now 1 500 Angolan businesses have participated in the programme and 124 companies have been certified as suppliers for the oil industry. The CAE has generated oil industry contracts worth more than USD214 million and supported the creation of more than 2 700 jobs for Angolans.

- Nigeria

When ExxonMobil undertook the USD1.3 billion East Area Natural Gas-to-liquid project, Nigerian financial institutions provided USD220 million in funding. In addition, local oil service companies in fabrication, logistics support and other services were involved in the construction, installation of pipelines and fabrication of components. A technical training centre was also established to develop local skills to service the industry.

- Ghana, Tanzania and Uganda

The cost to sponsor a worker to earn a degree at a Western university exceeds USD100 000. Nevertheless, companies such as BG in Tanzania and Tullow in Uganda are proactively sending their local staff to study and train abroad. The cost to send employees to local institutions can be six times cheaper and this is encouraging tertiary institutions to offer oil and gas industry-related subjects. For instance, Makerere University in Kampala started offering Master of Science degrees specialising in geosciences and petroleum production at the end of 2012.

Country profile: Ghana

- The Jubilee Field is the fastest ever deepwater development in the world to go into production.
- Rapid ramping up of production – 110 000bbl/d
- More FPSO projects likely as well as possible LNG development
- An African success story

Size:	238 500km^2
Population:	24.7 million
GDP:	USD83.2 billion (79th in the world)
Proven reserves:	Gas 22.7Tcf Oil 660 million bbls

Key players

Hess	Vanco	Tap Oil
Eni	Lukoil	Sahara Oil
Afren	Anadarko	Kosmos Energy
Tullow Oil plc	Ophir	

Recent developments

- Ghana's oil potential was first realised with the discovery of the 1.6bboe Jubilee Field in 2007.
- The major success of the Jubilee Field has been the driving force for interest from other oil companies to explore the upper Cretaceous region in other countries in the Gulf of Guinea such as Benin, Liberia, Sierra Leone and Togo.
- Expansion of the Jubilee Field continues with Jubilee Phase 1A expected to boost production further from 2015.
- The gas processing plant at Atuaba will be able to monetise gas produced from offshore fields.
- Hess and Statoil discovered a 149m net pay zone in the Deepwater Tano/ Cape Three Points licence acreage, which is still being evaluated.
- Eni discovered commercial offshore gas find with flow rates of 5 000bbl/d. Eni is investigating possible LNG development.
- Kosmos and Tullow are both appraising the possible development of floating, production, storage and offloading (FPSO) projects.

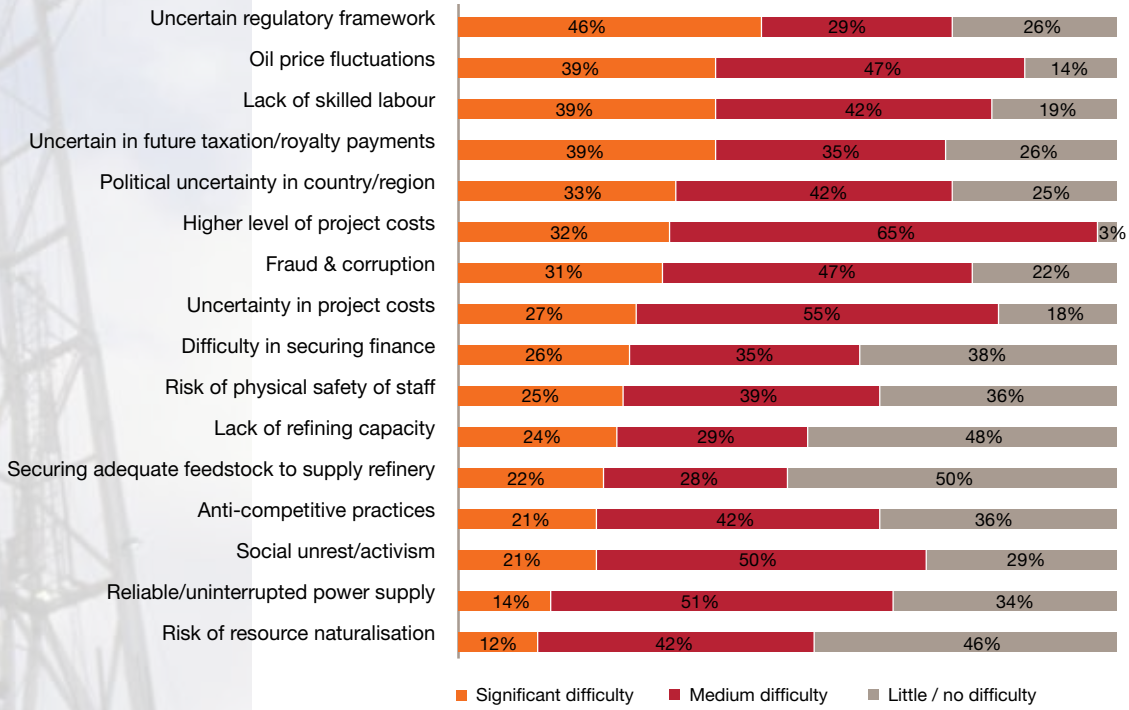
Regulatory environment

- The Petroleum Commission (PC) was established in 2012 as the industry regulator.
- E&P rights are based on a 30-year production sharing contract with the contractor bearing all the costs and risks.
- The Ghanaian regulatory framework includes the Petroleum and Exploration Production Law, Petroleum Income Tax Law, Internal Revenue Act, VAT Act, the Petroleum (Exploration and Production) Act 2010, which deal with taxation, royalties, pre-production costs, duties and other provision requirements.
- Petroleum regulations setting measurable local content and participation targets are being drafted with local content requirements reaching 90% after 10 years. In addition to local content, there is a further requirement for 10% local participation for subcontractors and 5% for operators.
- The Ghana National Petroleum Corporation (GNPC) is the national oil company and has a 10% participating interest with the possibility of obtaining another 2.5% in all assets.

Sustaining growth

Q: What difficulties or constraints do you anticipate in realising your growth strategy?

Figure 13: Difficulties/constraints in realising growth strategy



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Oil and gas companies have identified uncertainty as a key constraint to sustaining growth. This presents itself in the regulatory framework, commodity prices, taxation, political stability and project costs. Much of this lack of confidence is also driven by the fact that governments often target the oil and gas industry as an easy way of increasing government revenue, either through legislation, taxes or renegotiating contracts.

Delays in the finalisation and introduction of proposed industry policies impact the attractiveness of the upstream investment opportunities. Nigeria's Petroleum Industry Bill released in 2008 is an example of this. The proposed law, delays and continued uncertainty about its promulgation into law are conservatively estimated to have cost Nigeria more than USD50 billion in lost investment.

Political intervention and interference was described as an issue that restricted growth and delayed projects as well as the monetisation of assets.

Resource naturalisation and political uncertainty ranks high as a risk to growth. More than half (54%) of respondents viewed these factors as being of either a 'significant' or 'medium' difficulty. However, this is a meaningful improvement since 2010, when two-thirds of respondents held this view. Countries such as Uganda, Ghana, Kenya, Tanzania and Nigeria were the countries in which the greatest concern was voiced over the uncertain regulatory framework.

Proposed changes to the Mineral and Petroleum Resource Development Act in South Africa will be of concern to E&P companies in South Africa as it could allow the government to partially nationalise license blocks.

Q: What do you expect to happen to your production levels over the next year?

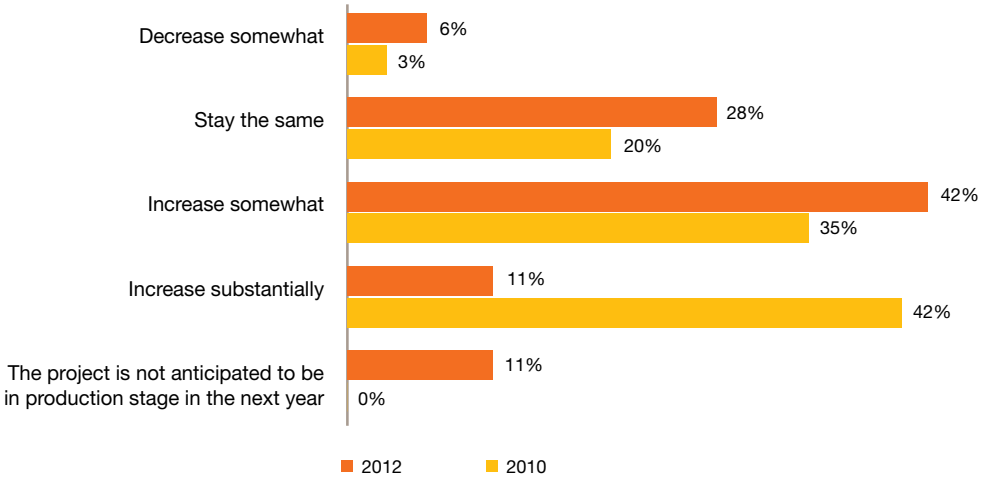
About 63% of E&P companies that were in production anticipated an increase in production over the next year. This is 14% less than in the 2010 survey. The main area of change is that in 2010 42% of the companies in production stated that production would substantially increase whereas in 2012 this had dropped by two-thirds to 13%.

The lower expected production figures are for the most part attributable to:

- The ramping up of production by companies between 2010 and 2012, particularly in countries such as Ghana and Angola; and
- A slightly less positive outlook due to uncertainty about regulations, taxes and royalties, which are causing companies to hold back on investment.

For example, uncertainty in the regulatory environment and industry policy finalisation has held back the commencement of production in Uganda.

Figure 14: E&P companies' expected production trends



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Q: What do you expect to happen to acreage/licence acquisition costs over the next year?

No respondents thought that acreage/licence acquisition costs would decrease over the next year, while 43% believed acreage costs would increase slightly and 13% thought they would increase substantially.

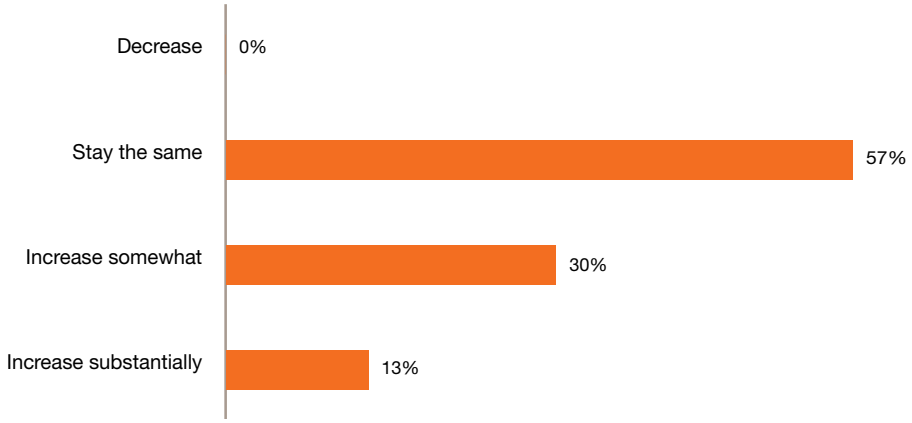
No region anticipated that the price of acreage would increase substantially, as the price of acreage has already increased substantially over the last few years and has already been factored into recent bidding rounds and farm-ins.

Competition for acreage in the coming year is expected to remain competitive as international oil companies and independents, especially from Europe, China and India, aim to increase their portfolios in areas often considered the last frontier.

Gabon issued licences in 2012, while Kenya, Algeria, Equatorial Guinea, Mozambique and Uganda will do so in the coming years.

A key development in recent years has been the increased number of farm-outs, especially in Ghana and East Africa. Exploration companies in some cases are continuing to buy licences and exploration rights with the sole aim of obtaining the rights and performing a few exploratory wells in their block before selling on the rights for a substantial profit. Another common reason for farm-outs is for E&P companies to obtain cash to finance the high cost of development and production.

Figure 15: E&P companies' expected acreage/licence costs



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In 2012, a bidding war between Thailand's PTTEP and Shell took place for Cove Energy's stake in the Rovuma Basin in Mozambique. PTTEP triumphed when Shell decided to pull out.

Shell cited the price of around USD1.7-1.8 billion as more than it was willing to pay for a minority share in the Area 1 Onshore (10%) and Offshore (8.5%) concession.

Q: Do you anticipate a change in the competitive environment with different competitors operating in your region?

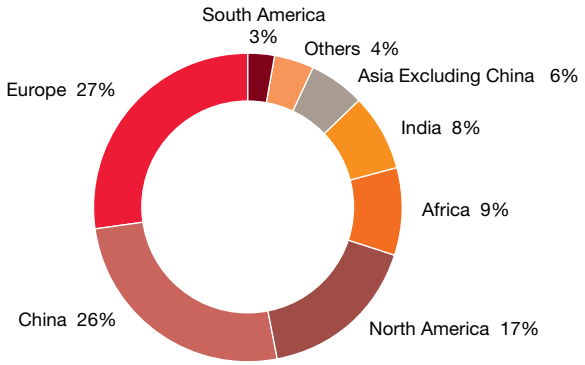
Fifty-eight percent of the respondents do not expect a change in the competitive landscape. Of those that did, South African respondents expected the greatest change in the competitive environment. This view is backed up by the recent entry of Cairn India, Chevron and ExxonMobil into the upstream segment of the market.

There has been a shift in the expected sources of foreign direct investment away from the traditional regions of Europe and North America. Although Europe is expected to continue to be the area where most direct investment originates (27%), the emerging economies of China (26%) and India (8%) are also seen as significant sources of investment.

An interesting trend is that direct investment in Africa is also expected by African-based companies, primarily by local businesses and foreign national oil companies expanding their portfolios and risk across African countries.

Recent changes in the downstream market in Africa, with international oil companies completing their divestment programmes, have also led to a changing competitive landscape.

Figure 16: Expected sources of direct foreign investment



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Many international oil companies' interests have been taken over by industry players traditionally associated with trading activities.

Companies like Vitol, the world's largest independent oil trader, which has invested in Shell's downstream assets in Africa, are also increasingly investing in upstream and refining assets.

Trading houses are vertically integrating and expanding their operations from trading only towards gaining greater control of the supply chain of natural resources. This trend may see the emergence of a new type of competitor on the African landscape.

Country profile: Côte d'Ivoire

- A surge of investment
- Political stability new licences awarded since the end of the political crisis in 2011
- Increased production of both oil and gas in the next few years
- Corruption and ethnic tensions remain a challenge

Size:	322 000km^2
Population:	22.0 million
GDP:	USD39.7 billion (104th in the world)
Proven reserves:	1.0Tcf Oil 100 million bbls

Key players

Total	Foxtrot	Rialto
Anadarko	Edison Oil	African Petroleum
Lukoil	Vanco Energy	Canadian Natural Resources (CNR)
Tullow Oil plc	Afren	

Recent developments

- Many of Côte d'Ivoire's early gas fields were not developed due to lack of commercial viability in the 1980s. This is now changing with Afren developing and piping its Kudu, Eland and Ibex gas to shore.
- Rialto Energy has a three-well development programme and intends to start production from its 1Tcf Gazelle gas field in early 2014.
- The Espoir field, which produced in the 1980s, was brought back on stream in 2006 by the Tullow/CNR consortium. Eight new wells are planned to extend the life of the field and increase production to 30 000bbl/d.
- The Baobab oil field reached peak production in 2009. CNR are now in the development phase with 5 new wells planned with the intention to extend production.
- African Petroleum and Total are the latest entrants into Côte d'Ivoire, setting up 2011 and 2012 respectively.
- The country's single refinery refines around 50 000bbl/d and there is talk of expanding its capacity by between 20 000bbl/d and 100 000bbl/d and developing a new refinery. Both options seem unlikely until reliable feedstock can be secured.

Regulatory environment

- Société Nationale d'Opertations de la Côte d'Ivoire (Petroci) is the national oil company.
- The exploration of oil and gas may be carried out via concession contracts, productions sharing contracts or other types of contract. Productions sharing contracts are the most common in Côte d'Ivoire.
- Production sharing contracts are signed by the government, Petroci and the oil company. Companies are obliged to enter into joint operating agreements with Petroci. Each production sharing contract includes specific tax rules and exemptions and generally contains a stability provision to protect oil companies from any unfavourable changes in the law.
- Exploration licences are usually for five years and production agreements for 25 years, with further extension possible.
- All recent contracts have been awarded through direct negotiations, but this is expected to change with the introduction of bidding rounds to speed up the process.
- The new government has been proactive in reviewing contracts and may request companies to relinquish licences if terms have not been met, as it aims to increase oil production.
- Morocco's Office National des Hydrocarbures et Mines (ONHYM) controls the oil and gas industry in Morocco and is in effect the national oil company.

Country profile: Nigeria

- Nigeria has the largest gas and second-largest oil reserves in Africa
- Troubled times for Nigeria
- The sleeping giant
- After five years the Petroleum Industry Bill has yet to be passed

Size:	924 000km^2
Population:	170.1 million
GDP:	USD450.5 billion (31st in the world)
Proven reserves:	Gas 186.7Tcf Oil 37 200 million bbls

Key players

Shell	Texaco	ExxonMobil
Total	Agip	Sinopec
Chevron	Oanda	Nigeria LNG

Recent developments

- Sinopec acquired 20% of the offshore block OML138 for USD2.5 billion in November 2012, which is 10% of Total's Nigerian portfolio.
- The Petroleum Industry Bill continues to face opposition from oil companies and politicians, and is likely to require further changes.
- The next licensing round has been delayed while companies await clarification on the final content of the Bill, which has also stifled inward investment by an estimated USD50 billion.
- Illegal bunkering is an emerging trend, with Shell estimating the losses across the industry at 150 000bbl/d.
- The Nigerian National Petroleum Corporation's (NNPC) rising debt and recent condemnation by a government task force of illegal transactions is having a detrimental effect on the country's creditworthiness.
- Annual production of 2.2 million bbl/d is well below the government's target of 4 million bbl/d.
- The government has released plans to reduce gas flaring from 11% to 2% by 2017.
- 33% of Nigeria's oil and gas exports are destined for the USA, which could be self-sufficient soon.

Regulatory environment

- The proposed and much-delayed Petroleum Industry Bill (PIB) aims to create a more stringent fiscal regime, with increased taxes, increased rents and royalties. The Act will require oil companies to pay 50% profit tax for onshore and shallow areas, and a 25% levy for frontier acreage and deepwater areas. It is likely that the PIB will be applied retrospectively.
- The Coastal and Inland Shipping Act requires a waiver to be granted by the minister if a vessel is not wholly owned, built and crewed by Nigerians.
- The National Oil and Gas Development Act has stringent localisation provisions requiring Nigerian companies to own over 50% of the equipment utilised, expatriate management positions to be limited to 5% and all other positions to be transferred to locals within four years of its promulgation.
- 1% of every awarded contract in the upstream sector is to be deducted at source.
- The Petroleum Profit After Tax Act levies taxes depending on a petroleum company's contracts and operations.
- The Nigerian National Petroleum Corporation (NNPC) is the national oil company.

National oil companies

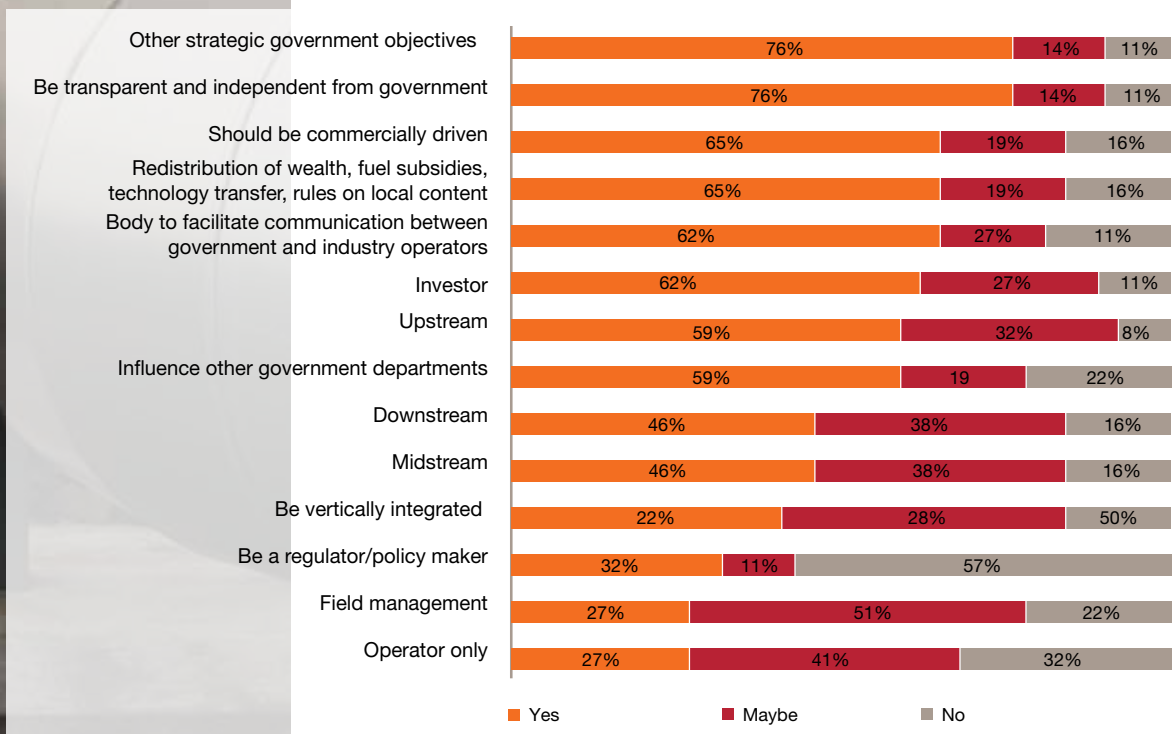
Q: What role should a national oil company play in the oil and gas industry?

Respondents believe the main role of national oil companies' is to be commercially driven, with the company providing transparency and being independent of government. National oil companies should therefore facilitate communications between the government and investors. National oil companies' knowledge of the industry should allow for it to influence other government departments.

Respondents do not believe national oil companies should be regulators/ policymakers or interfere with field management as this would create a conflict of interest and be deemed to be meddling in E&P operations.

Respondents were fairly ambivalent about whether national oil companies should be involved in downstream and midstream operations. On the other hand, it was considered positive for them to be involved in upstream operations or as an investor.

Figure 17: Roles national oil companies should play



Base: 37

Country profile: Morocco

- The region's relatively stable political environment boosts interest in E&P
- Offshore acreage is being taken up by deepwater specialists
- Some conventional and unconventional interest onshore

Size:	446 000km^2
Population:	32.3 million
GDP:	US171.0 billion (59th in the world)
Proven reserves:	Gas 0.06Tcf Oil 0.7 million bbls

Key players

Chevron	Kosmos	Total
Genel Energy	Galp Energia	CNOOC
Cairn India	Gulfsands Petroleum	Repsol
Plains E&P	Circle Oil	

Recent developments

- The last two years have seen increased reconnaissance in the oil and gas industry, especially offshore in the Atlantic Margin.
- High hopes for Morocco's potential is based on the similarity of the offshore geology to eastern Canada's first oil-producing reservoir, Cohasset-Panuke, and the recently developed Deep Panuke gas field.
- Smaller players are farming out to the larger newcomers.
- Chevron and Chariot Oil are the latest offshore entrants.
- Morocco is more politically stable than other countries in the region, although sovereignty disputes exist in the Western Sahara and the annexed Sahrawi region, where some licences have recently been exercised.
- Genel will being spudding three wells in the Sidi Moussa offshore block in 2014.
- Cairn India's first planned well is scheduled to be opened in the Foum Draa block in 2013.
- The National des Hydrocarbures et des Mines (ONHYM) the National Bureau of Petroleum and Mines recently listed 21 blocks for direct negotiation (19 onshore and two offshore).

Regulatory environment

- ONHYM controls the oil and gas industry and is in effect the national oil company.
- ONHYM performs direct negotiations with oil companies for exploration licences.
- The Hydrocarbon Law has been amended to allow model contracts that provide fiscal incentives to oil and gas companies. This includes 25% state participation through ONHYM and low royalties of 10% on oil production and 5% on gas.

Conclusion

With growing interest and investment from India, China and international oil companies operating in Africa, there has been increased competition for exploration acreage in recent years. As some of the traditional multinationals divest from areas in Africa, opportunities for new independents will emerge, causing the trading mix and diversity of the companies trading in Africa to change. This will cause established energy companies to become more agile in order to respond to greater competition and emerging trends.

African nations and consumers are starting to focus more and more on securing adequate supplies of crude oil and liquid fuels to satisfy growing local demand.

The pressure on governments will cause changes to pricing structures and regulatory frameworks as some countries move to a more deregulated trading environment. Other countries are enacting regulations to increase tax revenue and foreign exchange inflows. Although this may be achieved in the short term, there is a possibility that such measures will cause a decrease in investment with long-term implications.

Apart from Mozambique joining Egypt, Nigeria Libya, Algeria and Angola as major upstream power houses in Africa, it unlikely that Ghana or the other East African countries will disturb the equilibrium that has existed in Africa for the last two decades.

Exploration and refining capacity in Africa will continue to increase, in contrast to what is happening in the developing world, as countries strive to have a greater security of supply and increase export earnings from the sale of refined products. At the same time, uncertain regulatory frameworks, political intervention and the nationalisation of resources will be key issues that will affect the oil and gas industry in the coming years.

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List of acronyms

bboe	Billion barrel of oil equivalent
bbl/d	Barrels per day
CBM	Coal bed methane
CAE	Centro de Apoio Empresarial (oil industry business support centre, Angola)
CNOOC	China National Offshore Oil Corporation
CNR	Canadian Natural Resources
DoE	Department of Energy (South Africa)
EACCMA	East Africa Community Customs Management Act (Kenya)
E&P	Exploration and production
EIA	Energy Information Administration
ENH	Empresa Nacional de Hidrocarbonetos (national oil company, Mozambique)
EPC	Engineering, procurement and construction
FPSO	Floating, production, storage and offloading projects
GDP	Gross domestic product
GNPC	Ghana National Petroleum Corporation
IOC	International oil company
INP	Instituto Nacional de Petroleos (national petroleum regulator, Mozambique)
JOA	Joint operating agreement
LNG	Liquefied natural gas
m	Metres
MEMD	Ministry of Energy and Mineral Development (Uganda)
MME	Ministry of Mines and Energy (Namibia)
Mtpa	Million tonnes per annum (Million metric tons per annum)
MPRDA	Mineral and Petroleum Resource Development Act (South Africa)
NATOIL	National Oil Company (Uganda)
NOC	National oil company
NOCK	National Oil Company of Kenya
NNPC	Nigerian National Petroleum Corporation
ONHYM	National des Hydrocarbures et des Mines (National Bureau of Petroleum and Mines, Morocco)

OECD	Organisation for Economic Co-operation and Development
PASA	Petroleum Agency of South Africa
PAU	Petroleum Authority of Uganda
PC	Petroleum Commission (Ghana)
PEPD	Petroleum Exploration and Production Department (Uganda)
Petroci	Societe Nationale d'Opertations de la Côte d'Ivoire (national oil company, Côte d'Ivoire)
PIB	Petroleum Industry Bill (Nigeria)
PSA	Production sharing agreement
PSC	Production sharing contract
SHEQ	Safety, health, environmental and quality
Tcf	Trillion cubic feet
TCP	Technical cooperation permits
TPDC	Tanzanian Petroleum Development Corporation
UNEP	United Nations Environment Programme