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INSIGHTS

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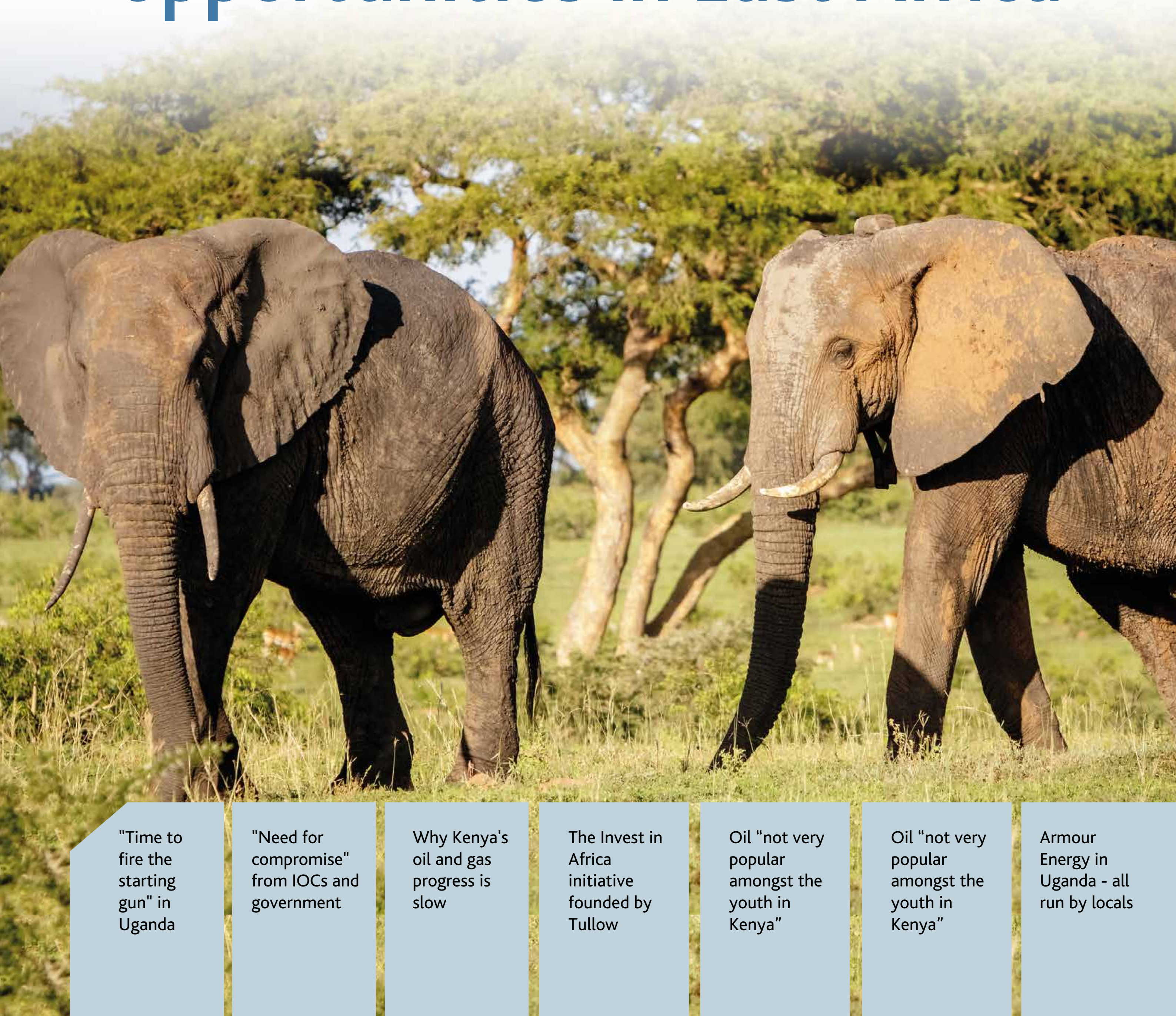
Finding oil and gas business opportunities in East Africa



"Time to fire the starting gun" in Uganda

"Need for compromise" from IOCs and government

Why Kenya's oil and gas progress is slow

The Invest in Africa initiative founded by Tullow

Oil "not very popular amongst the youth in Kenya"

Oil "not very popular amongst the youth in Kenya"

Armour Energy in Uganda - all run by locals

Finding oil and gas business opportunities in East Africa

If you are looking around the world for oil and gas reservoirs to explore and develop, or a market for oil and gas training, it is hard to beat East Africa for potential. But working out how to make a return on your investment is challenging.

If your company is looking for business opportunities in oil and gas production, or training, then it sounds like East Africa should be a good place to go.

There have been big oil and gas discoveries in Mozambique, Uganda, Kenya and Tanzania not yet brought into development. The national governments say they support the oil and gas industry. The local workforce needs training and development/experience.

Making a return on your investment is turning out to be extremely challenging. People with experience in oil and gas in Uganda, Kenya and Tanzania, both local and international, express a lot of frustration about how hard it is to make progress, basically due to a lack of political will to find an economic solution which provides revenues to the country and community and also satisfies investors, as interviews for this issue of Petromall Insights show.

Mozambique, not always considered part of East Africa, does have much more oil and gas activity, but largely tied up by multinationals. And all its oil and gas training needs are paid for by multinationals and donors.

Kenya and Uganda require expensive pipelines to carry their oil from the fields to ports for export while also building their own refineries to process in country. Until plans for this are agreed, there can be no oil production.

This issue of Petromall Insights includes nine interviews with people in the region active or aware of the local oil and gas industry, five local and four international.

The aim of this report is to deliver the personal opinions of people with direct experience – something which cannot be easily found in other written material.

The history of oil and gas production in Africa, and production of other resources, often involves the wealth going to people other than the local communities or the state. This provides a context to what is happening today, with a much harder push from governments and local communities to get a bigger share.

But if governments and communities push too hard, then nothing happens – and that appears to be largely what is happening today, in Kenya, Tanzania and Uganda.

Small oil and gas companies need to satisfy their investors, who cannot wait indefinitely to get a return on their capital. Bigger oil and gas companies can afford to wait longer, but have many options in the world to invest their capital and talent and will choose the most viable projects. And oil and gas production needs plenty of technical expertise, which is currently only available in international companies.

Communities in Africa are pushing not only for a share of revenue, but a share of jobs and businesses, ultimately a share of the worldwide oil and gas service market, as we see in today's other major oil and gas producing regions.

But getting to this point takes time, as it did in Aberdeen, Stavanger and Kuala Lumpur, and other oilcentric cities around the world. Any new oil and gas region is initially dependent on international expertise (as was also the case in Aberdeen, Stavanger and Kuala Lumpur, when the oil and gas industry in those places began).

Perhaps the problem could be defined as insufficient political will to resolve problems, find a pathway which satisfies international investors and oil companies enough to keep them engaged, while also giving as much back to local states and communities as possible.

Young, ambitious people in Uganda and Kenya look with envy to Rwanda, led by Paul Kagame, a relative youngster for African presidents, aged 61, and where people in the 20s have been given senior government roles. There is momentum there for change. Unfortunately Rwanda does not yet have much hydrocarbon discovered.

Training

In theory there are many business oppor-

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Petromall was founded by 4 senior industry and academic practitioners who consider the challenges faced by today's oil and gas environment are going to require herculean acts of leadership and technical skill in the high cost provinces of the world, in order to maintain an industry that is sustainable and even recognisable compared to recent history.

Similarly nations developing an oil and gas industry face related challenges as they seek to maximise the benefits of this new wealth-creating opportunity - in a responsible manner.

GLOBAL REACH

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Our presence reaches parts of the globe, such as: the UK, Malta, the USA, through partners in the Middle East, North Africa and Sub-Saharan Africa.

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Cover image: Production enhancements recommended by Intelligent Plant's "Well Intelligence" App tunities for training providers, with a local workforce keen to develop lucrative oil and gas skills. But funding this training is another matter, with locals unable to pay and governments unwilling to fund it.

Much more oil and gas training is taking place in Mozambique, where companies with oil and gas production are required to both train locals themselves and contribute to a training fund. There is also more access to donor funds, partly linked to helping the country find its way out of the difficulties of a 15 year civil war, which ended in 1992.

Oil and gas training institutions do exist, and people interested in providing training can work with these institutions. But there's not necessarily any pathway to being paid for it.

Perhaps the way oil and gas training is traditionally delivered should be rethought.

In the digital age, people do not necessarily need access to classroom training and course materials, which is largely available free online.

A new model for training might involve access to domain experts, who set problems and help people to solve them, and a means of working together in a team or learning group with others in the same situation, to try to solve the problem, supported by a range of digital tools.

With personal transport so difficult and distances so large, and most oil and gas expertise based outside the country, it should rely on a great deal of virtual / distance learning.

But this is also difficult to develop, and get accreditation for, when the higher education authorities, who provide accreditation for courses, typically expect to see a traditional classroom and course materials.

Growing local businesses

Oil and gas companies are usually required to work with local businesses where a suitable local supplier is available. So there should be opportunities to establish businesses as the oil and gas industry in each region grows.

Service companies to oil and gas are on a wide spectrum of technical sophistication, from transport, accommodation, food and security, at one end, to complex oil and gas support services at the other end.

The industry will need large numbers of welders to build pipelines, as well as other more hands on technical roles such as electrical engineering. But there is question of whether these people should be sourced locally, considering that building a pipeline is not a task which lasts for more than a year.

There is a thriving technology start-up community in Nairobi, Kenya, which is not yet applying its focus to the oil and gas industry, but it could do, with some encouragement.

Greg Coleman – time to fire the starting gun in Uganda

Uganda needs to "fire the starting gun" on its oil and gas industry, says oil veteran Greg Coleman, "whether you're ready or not. Otherwise, it's not going to happen at all."

The discussions between government and companies about terms for oil and gas production have been going on so long that both individuals and the companies themselves are thinking about going elsewhere, says Greg Coleman.

Mr Coleman is a director of Petromall, a director and investor in the Virtual University of Uganda (VUU), and a former senior executive with BP.

The industry needs to just get started. It can do this by moving forward on master plans which are merely "good", not wait for perfect master plans, he says. Any bad things which emerge as the industry develops can be dealt with as you go. Uganda should not try to control everything and instead "let the market control and adjust".

International investors need to be encouraged, with just a sufficient level of oversight to ensure it is not a free for all.

Currently we have a scenario where people have taken petroleum engineering degrees, graduated 5 years ago, but there are still no jobs.

As of February 2019, a number of Ugandan locals have been trained in oil and gas by CNOOC, but haven't yet been given local oil and gas jobs, because there is not yet any work, forcing them to work outside the industry.

Uganda has run a number of "local content" conferences, discussing opportunities for local people in the industry, and at the last one, people were saying they have heard the same thing every year for 5 years.

Politics

Politicians have created unrealistic expectations that the industry would make them wealthy – setting realistic expectations is a real challenge for politicians, he said.

In Uganda, "Compromise is what's missing," he said. "I don't think Ugandans are being unreasonable, but they don't make it attractive enough."

One example is the high capital gains tax which oil investors are expected to pay when they sell a discovery. They take a large risk, but when oil is found, have to pay a tax when they sell it. This makes it less attractive to sell

Mr Coleman, director of Petromall, invetor in the Virtual University of Uganda (VUU), and a former global head of HSSE with BP.

their discovery and so prevents new investors from being able to come in.

Another problem is the tariff oil companies have to pay to ship oil through the pipeline which will be built to carry oil from inland oilfields to coastal ports, currently set at $12 to $13. "This tariff is much too high," he says.

To illustrate how this looks to an oil company, consider that the oil price might be $50 per barrel in the long term, which is discounted to $45 for lower quality oil. After paying a $12.5 tariff, leaving $32.50 per barrel to pay for capital investment and operating costs while returning an adequate return to the investors. Cost recovery and taxes/government share must be taken into account but margins can get thin in a hurry.

Other issues

Security issues can make life much harder. One oil major in Mozambique is reported to have just ordered 6 armoured personnel carriers, just to carry people to work.

Local communities can resist oil and gas developments if they see it means being forced to give up their family land and farms, and it will lead to price inflation in local shops, and perhaps the money in the local economy will encourage petty crime or worse.

There can also be fighting over oil money. This has been seen in South Sudan, and as a result, oil production has declined from 350kbopd 7 years ago to about 40 kbopd today, he says.

Oil companies

Only Total,Tullow and CNOOC are active developers in Uganda. Oranto and Armour Energy are conducting exploration activities on a smaller scale. These international oil companies could be exploring anywhere in the world, and many other places could look more attractive to them, such as Guyana(several billion barrels of announced discoveries) Iraq, Egypt, West Africa, Brazil and the Gulf of Mexico.

If Uganda is a particularly difficult project, then an oil company will need to put its best people to work on it, which means they are not working elsewhere.

The volumes of investment needed are so large only oil majors have pockets big enough – with investments needed of around $25bn in Uganda, $30 to $50bn in Mozambique (where gas is being liquefied), $30 to $40bn in Tanzania, and $10bn in Kenya, Mr Coleman estimates.

Training

Uganda has a big need for training and development of its people, because it has not had an oil and gas industry before, and does not even have many related industries with people with a close match in skills, or who operate similar equipment. The closest industry it has to oil and gas is probably mining, he says.

In this way East Africa is very different to say Azerbaijan, which has had an oil and gas industry for over 100 years.

Perhaps the best way to train local people is for oil companies to send them to work in their operations elsewhere in the world, such as Total training Ugandan refinery workers in a refinery in France. But that is a big investment for the company to make, particularly if an employee may leave the company after training.

This could be thought of as a managed transition, gradually reaching the point where local people have sufficient competence to have critical roles in the industry.

Plenty of other places in the world have gradually transitioned from having their oil and gas industry foreign operated to locally operated, and ultimately having a local industry exporting oil and gas services outside the region. For example Scotland, Norway, Canada, Russia and Azerbaijan. This transition typically takes 20-30 years, he says.

And perhaps not all jobs should be local. Consider the several hundred qualified welders who will be needed to build the pipeline to the coast. The requirement for welders will drop to about 20 once it is built. So it may make much more sense to bring the welders from around the world rather than train locals.

Virtual University of Uganda

Mr Coleman is an investor in the Virtual University of Uganda (VUU), a university providing accredited masters programs with virtual courses, taught by teachers virtually. The teachers are from around the world.

It offers courses at Master's level, Diploma and Certificate levels in the fields of Public Health, International Development, Information and Technology, MBA, Oil and Gas Management, Women in Finance, Environmental Management and Hospitality and Tourism Management.

VUU has set up a UK based charity, for people to make donations towards training East African students.

The online education concept is "still in its early days", and regulators and employers have some catching up to do in making the most out of it, he said. It would be useful for there to be better awareness about what it is and why it is the way of the future. And the education itself has room to develop, particularly through improvements in data communications bandwidth.

Elsewhere in East Africa

Compared to Uganda, Kenya is more industrialised, and has its own coastline, so it can deliver oil to market without arrangements with another country. It is seen more of a coastal hub. It also already has had a refinery and import and distribution facilities for the region.

The distance from oilfields to the coast is half the distance compared with Uganda. Having Somalia next door is a disadvantage, with al-Shabaab, a jihadist fundamentalist group, being active there.

In Mozambique and Tanzania, there are potential big LNG schemes, mainly with offshore gas, which does not necessarily provide much local benefit. Three can be arguments about why lights start going off at night when there is so much gas production. Prices are also high.

Uganda and the IOCs need to compromise - Brian Ntambirweki

Development for the oil and gas industry in Uganda is moving at a slow pace. Oil discoveries were made in 2006, and there have been lengthy discussions about operational and fiscal terms; people may feel that after all one more year of delay will not make a difference.

As of March 2019, the initial dates for the Final Investment Decision (FID) have been postponed from December 2018 to June 2019.

"Given the challenging initial preparatory stage, it is unlikely that the FID will be realized in June 2019, because key elements of the project such as the refinery and pipeline still lack consensus and concrete plans", says Brian Ntambirweki, marketing director of Virtual University of Uganda and Consultant with Petromall in Kampala. Mr. Ntambirweki is also a "Global Shaper" with the World Economic Forum, and has an MSc in Finance and Investment from the University of Edinburgh (graduated in 2012).

Despite the fact that the Government of Uganda controls the resources and has significant negotiating power, the International Oil Companies (IOCs) have an array of projects across the world and have the ability to choose the most feasible ones. For instance, Total has recently made large oil discoveries in Nigeria and South Africa.

"Therefore, it is critical that both sides compromise and find the best approach to minimize the risks associated with the project", he says. The IOCs have the financial capability the country requires to develop their resources, which necessitates a certain degree of patience and compromise on both sides.

Mr. Ntambirweki notes that most countries that have established successful oil and gas industries were assisted by foreign expertise and companies; with the government's 'take' or level of control gradually increasing as the IOCs made a return on their investment and minimized their risks. These countries include Norway, Saudi Arabia, Kuwait and Egypt.

"Uganda should manage this industry in a similar manner and combine this approach with providing an enabling environment to the companies that make critical financial investments. Oil and gas projects are highly technical and specialized, they require highly experienced project management firms and service companies."

There are plans to charge USD 12 per barrel for transporting oil through the East African Crude Oil Pipeline (EACOP) to the Tanga port in Tanzania. "If this price is approved, there is a risk of making the project less attractive for international investment", he said. These kinds of tariffs would normally be designed to fluctuate with the oil prices depending on the prevailing world market. Currently, oil prices are hovering around the $65 mark, however, in 2014, oil prices peaked at almost $116 per barrel before sinking by more than 60% to $48 by January 2015.

The price drop plunged the industry into crisis, with major international oil companies and small independents cancelling billions of dollars worth of projects planned for 2015 and 2016. In case of a dip in oil prices, the production of oil in Uganda will not make economic sense, especially with high tariffs for the transportation of oil", Mr. Ntambirweki says, oil companies are aware of these price trends due to the pain they experienced from price fluctuations in recent years.

Uganda's local content strategy for the oil and gas industry is commendable, however, for the local companies to participate optimally, there is need for well thought out strategies emphasizing relevant skills development and knowledge transfer. It is a fact that the oil and gas industry requires specialized services, competencies and skills; which entails further training to accumulate and strengthen local knowledge on a regular basis. "We need to take a leaf from other countries in the world that have successfully developed their hydrocarbons with high local participation, they all took similar approach."

One of the approaches would be through careful contracting process; ensuring that risks are effectively managed and benefits are shared in a manner acceptable to both parties. For example, there could be a clause in a contract emphasizing the fact that a certain proportion of oil produced must be sold to a national refinery.

The oil and gas industry has the potential and is positioned to double Uganda's GDP within three (3) years, and will gradually transform lives of people in Uganda. The projected investment of $20 billion will represent an over 60% growth of foreign direct investment into the country. "To have a trickle down positive effect on the economy, there is need to revisit the Ugandan education system and promote a skills and competency-based one that encourages people to learn and innovate as opposed to cram and re-produce facts", he suggests.

Brian Ntambirweki, marketing director of Virtual University of Uganda and Consultant with Petromall in Kampala.

Uganda is an interesting but complicated country, about the same area of land as the United Kingdom, with a diverse range of tribal groups as well as a history of violence. "To keep people peaceful, together and secure is often difficult and challenging," he said. "For over thirty years, the Government of Uganda has performed exceptionally well in ensuring peace and security, there is need to leverage this status to create and maintain industries necessary to achieve the Middle Income Status and positively transform lives".

Foreign expertise

The most relevant foreign expertise required in the oil and gas industry is expertise in strategy formulation and effective management of the sector, he says. Companies should have ability to create scenarios, with predications, for example, if one gets final investment decision on this date, the outcomes of that decision at a certain period should be predictable.

They could also benefit from regular knowledge transfer and capacity building in business skills - such as accounting, human resource management and project management skills.

Foreign companies often attempt to import or replicate their home business models in Uganda without taking into consideration the differences in culture and national priorities. "This approach sometimes has negative implications," he says. It is imperative that compromise on key issues is given prominence, and business models are contextualised.

Kenya – oil and gas progress slow – Liz Muange

Liz Muange, an Investment Expert in East Africa, sees that progress for the oil and gas industry in Kenya is very slow. This being a new sector in Kenya there's a lot of industry knowledge, policies and community engagement that needs to be done.

In addition, for the industry to take off and have the benefits for the country. Both the government and private sector must ensure the industry will develop the country and not divide it, she says.
The individual interests of stakeholders should not be allowed to reign and the local communities needs must met especially those that will need to be displaced or relocated to ensure that the oil production can happen.

People in Kenya can see that oil has been something of a curse in other African countries, with the benefits going to a small number of people and being a cause of warfare, and there is great scepticism from some about whether oil can benefit Kenya, she says. "We have seen in other oil rich countries the divisions and conflict that the resource brings. It will be good for Kenya to learn from these countries."

Oil resources ought to be good for the society as it brings wealth that can be distributed to key areas of development such as healthcare and education. However, there isn't much confidence that this new sector will contribute significantly to both economic development of the country and the population, she says.

This is because of various factors such as the technical gaps in the local context to build the right frameworks to ensure successful growth and development of the sector, the poor governance of valuable resources, issues of corruption and abuse of power. There are also concerns about potential environmental damage the sector will bring and the capability to manage these risks effectively.

There is a shortage of technical knowhow in Kenya in the 0il and gas sector, she says. "And a lot of the consultants who claim they know what they are doing actually don't based on feedback she's gotten from industry players."

It would be good if outside technical experts could come with a mindset of building the core capacity in Kenya, "and making sure it sticks and remains here, she says. "We are building a whole new industry".

Setting up as an oil and gas services company requires not just start-up capital, and some level of general business expertise, but technical knowledge of the sector which is in short supply, she said.

In general, there is a mismatch between the education system in Kenya and the ever-changing skills needs of industry, so although many people are educated, they are not able to meet the demands of the work place. The unemployment rate is also very high, not enough jobs are being created to accommodate the graduating students, she says.

On the positive side, the entrepreneurship spirit in Nairobi is high. Many unemployed youth are gaining IT skills such as software development and working in the digital economy. Nairobi is now considered to be "the Silicon Savannah of Africa", a place where good IT professionals are available, and good internet bandwidth enabling a vibrant tech start-up ecosystem. "There's a lot of people using mobile apps to do innovative things," she says. It would be good to see what opportunities in the oil and gas sector exist for them.

Ms. Muange works in the investment space creating blended finance solutions to enable small and growing businesses access the financing they need for growth in East Africa. She previously worked at the USAID East Africa Trade and Investment Hub which promotes trade and investment with - and

Liz Muange, an Investment expert in East Africa

within - East Africa, through promoting trade with the United States, in a wide range of sectors but focusing on non-oil exports only.

Ms Muange is also a "Global Shaper" with the World Economic Forum. She is the Vice Curator of Nairobi Hub. She is also a 2017 Fellow of the Young and Emerging Leaders Project of the Leo Africa Institute based in Uganda.

Rwanda

Rwanda, in comparison with Kenya, looks like "the gem of Africa" when it comes to the attractiveness of the investment environment and youth participation in leadership. Young people are being brought on board to be part of policy making, she says.

"My friend is 24 and works in the Ministry of Finance in a high-level role. My other friend around 30 and is an advisor to one of the ministers. If you get people in their late 20s, early 30s, they are still passionate, they still have the drive to see their country grow." It is better for them to get in young and understand how the government works.

In Uganda and Kenya, "the old guard run the government, finding the way in as a young person is difficult. And if you find your way in, you conform to the practises that are there."

The Invest in Africa initiative: Creating access to skills, markets and finance opportunities to SMEs

Invest in Africa is a not for profit, private sector initiative founded by global partners and supported by local partners to enhance small and medium-sized enterprises (SMEs) access to skills, markets and finance in order to drive job creation and enterprise development in the economy.

Invest in Africa is a private sector, not for profit initiative initially founded by Tullow Oil, looking to find ways to develop small and medium-sized enterprises (SMEs), help them access to skills, markets and finance.

IIA has built a unique, world-class online technology platform – The African Partner Pool (APP) that directly connects SMEs with larger organizations sourcing for goods and services locally and also offers capacity building to enable address existing skill and knowledge gaps.

So far, IIA-Kenya has recruited and validated over 2,200 SMEs on the platform and plans to link SMEs to tenders worth 1 billion shillings and create 25,000 jobs by 2020. IIA works with a number of investors, and in different industry sectors, including oil and gas.

Wangechi Muriuki, Kenya Country Manager with Invest in Africa-Kenya says that her organisation aims to provide better coordination between people (perhaps foreign) who might want to invest in small businesses, local entrepreneurs, and their potential customers.

IIA-Kenya through the APP recruits and validates Kenyan businesses on behalf of larger companies who might want to contract with them. This reduces the turn around time in procurement.

The government is demanding that large companies give a growing share of their supply business to local companies, she said.

To support skills development, it runs "business linkage programs", giving small businesses access to mentorship and coaching, and providing assistance with governance and financial management.

Invest In Africa-Kenya also works with banks and financial partners to develop lending solutions, which can take advantage of their contracts – it is easier to lend small businesses money if they have a contract to supply services to a larger one.

Ms Muriuki sees the first oil and gas projects in Kenya and Uganda now "gearing towards commercialisation". As a result, oil companies will be increasingly expected to employ more locals and use more local businesses.

There is a big shortage of technical capability locally to help them, she says. "There's a huge need to develop the human capital."

One company was looking for oil and gas welders, and could not find anyone locally, so needed to fly people from Nigeria and Canada to do it, she says.

To improve local expertise, there could be more exchange programs, sending people to work in European oil and gas companies and develop skills. Or experienced oil and gas people could be brought to East Africa and work with specific organisations to help them develop skills.

One financing model could be for local companies to sponsor students, perhaps in return for a commitment to work for the company for a certain number of years.

Or there could be money paid to established educational institutions, for training students in specific oil and gas skills, so Kenyan universities partnering with oil and gas experts. Some partnerships between companies and universities have worked really well, she said.

There is a Petroleum Institute of East Africa in Nairobi but it is currently more midstream and downstream orientated, she said. There could be funding to support it to develop more upstream programs.

Oil companies could make a more social investment in oil and gas education, as Tullow Oil has done, focussing on the specific engineering and technical skills needed, such as welding.

Ms Muriuki agrees that the Nairobi digital technology skills are advanced. "Kenyans have been able to develop mind-boggling solutions," she said. "It requires very good engineering. We have many developers who are really agile and innovative," she said.

Oil "not very popular amongst the youth in Kenya" – Rachel Ngethe

Rachel Ngethe is currently studying for a MBA in financial management in Nairobi, after 5 years working internationally for Schlumberger in a technical role. Among her peers, fintech is a far more popular vocation, she says

The oil and gas industry in Kenya is "not very popular, not like fintech amongst my peers," she says.

Perhaps the problem is a lack of awareness of the oil and gas industry. Many people think oil is all about pipelines, and don't know much about the rest of it, she says.

There are many young people in Kenya with are strong science, technology engineering and maths subjects, who could study engineering courses and qualify to join roles within the oil and gas upstream space. "You need to get the right talent and I think they can do the job." Tullow has offered scholarships and local universities are now offering a petroleum engineering courses. This will see more numbers but more awareness efforts should be done for more youth to join.

The government has a big push for 'local content', and is trying to build capability in areas such as welding, she says.

There are few firms around the industry, providing more basic services such as food and catering.

For building local expertise, it might be good to have strong links between oil and gas companies and universities, she said. And for people to learn how to work in the industry, "you have to be exposed to it" – just classroom training alone won't work.

It would be useful for local people to have a better understanding of the different skills needed, from welders to petroleum engineers.

Ms Ngethe sees that the oil and gas industry in Kenya is moving slowly because of continued negotiations between companies and different arms of the government, local and national. But once that is settled, "it should move forward pretty smoothly," she says.

"No-one really wants the projects to stall, if they lose the revenue nothing will happen," she says. "It is in everybody's best interest [that projects happen]. It has to be done in a way which is fair for both parties -government and private sector."

Tanzania "not an easy place for business" – Neil Ritson

Tanzania is "not an easy place to do business," says Neil Ritson, an oil industry veteran who was formally chairman of Solo Oil, an AIM Listed oil and gas investment company with interests in Tanzania, Canada and the UK.

Mr Ritson has been involved in two Tanzanian projects, Solo Oil's Ntorya Gas Field joint venture project with UK company Aminex, and the Helium One project in Tanzania's Rukwa Basin, and "neither of those projects has been moving anything like the pace that we anticipated."

"Aminex's project in Tanzania hasn't made any visible progress recently, other than the drilling of an additional well and the proving of more reserves. And that doesn't get cash flow."

Independent oil companies are unable to sustain their investors unless they are making clear progress.

If you wanted to rank East African countries in how much they are open for meaningful business, "I would rate Kenya as the most open, Tanzania the least," he said. Mozambique is also clearly open for business but does not usually count as East Africa, he said.

The delays are caused by continuous effort by government to try to get a better deal. Working for a fair share of the reward for people is "what any rational and sensible politician must do," he said.

But they also need investment and technical expertise, which is not available in the country. "That's where Tanzania has essentially failed, in my opinion," he said. "The result is that investment has slowed, and they continue to miss their own targets."

For example, about 40 per cent of Tanzanians don't have electricity to their homes. The government has committed to remedy that by 2025, but is not making enough headway.

"They are not building enough new power stations. They can't agree on the terms of producing the gas that they need to fuel those power stations," he says.

"It becomes a sort of stand-off between the resource discoverers and the state, and little or nothing progresses," he said. "They'll talk, but they don't act."

"They just don't seem to have the political will to find the balance between investor return and the government take."

"The money will move elsewhere. The large offshore projects may progress, but the timescales are very long."

There are also some major offshore LNG projects yet to be progressed in Tanzania, and onshore gas production. "They are missing out on a lot of opportunity," he said.

"Investment has dried up and rather than get better results for the population, they are actually getting nothing."

"Elsewhere in East Africa, I think we're seeing some better deals being stuck between investors and the government on behalf of its people, but generally things are slow."

A similar picture is happening with the minerals sector in Tanzania.

The government is acting aggressively in the courts, for example raising a claim in 2017 of $30bn against Acacia Mining for non-payment of taxes, and ultimately settling "for a few percent of that".

"That behaviour doesn't encourage investment," he said.

"If you're thinking of investing in Tanzania, you need to take a very long-range view on that, and not overinvest too early."

"Small companies can't take those very long term projects. Only companies with very large balance sheets are able to wait."

"That does mean there are opportunities for large companies to pick up assets at a low valuation, and that's what we've seen, with Omani companies farming in to Aminex's Ruvuma project at a relatively reduced valuation."

What should young people do?

"Ultimately, I can see oil and gas will be produced in East Africa for the next 30-40 years," he said. "I cannot imagine that they will leave the hydrocarbons in the ground. It is probably not an economic choice that they can realistically take."

Neil Ritson an oil industry veteran, former chairman of Solo Oil

So there should be opportunities for young people in oil and gas, especially if they are prepared to work elsewhere while the industry gets established. Most oil skills are international.

"Training East African nationals in the petroleum industry makes a great deal of sense," he said.

And getting the balance in resource nationalism is not just about who gets the rent, it is also about how to train up the local workforce, so they and their families benefit economically.

"The problem will be employing them in the long term if governments are not actively pushing forward the projects."

Armour Energy in Uganda – all run by locals

Armour Energy is an Australian-owned oil and gas exploration company active in Uganda, with all of its staff and contractors local. Is this the start of a local oil and gas industry?

Armour Energy is an Australian-owned oil and gas exploration company active in Uganda, with all of its staff and contractors local.

It is led in Uganda by Tom Buringuriza, a Ugandan national who is a former deputy executive director of Ugandan Investment Authority and HR manager for Maersk Uganda. He is a board member of Citibank in Uganda, and sits on the Skills Council of the Ugandan Ministry of Education. He has a PhD from Maastricht School of Management.

Armour Energy acquired the Ugandan block following a worldwide review showing that over 30 per cent of the world's oil production and reserves are in Rift Basins. After work in Australia's Gippsland rift basin, it identified the Albertine Graben in Uganda, on the East Africa Rift system, as a target.

Like other interviewees for this report, Mr Buringuriza sees the challenge for the government as balancing the expectations of what government can make from the industry, with the returns which investors need to justify their participation.

In government the oil and gas industry is seen as a kind of savour, a way to make a big difference to tax receipts, while also creating employment. The expected investment in oil and gas could almost double the GDP of Uganda, he says.

But government risks pushing too hard. Consider that oil companies take large amounts of risk with their own money – in the case of exploration, they would lose all their investment if no oil was found, he says.

But yet oil companies are still required to increase their risk by employing local people, who are unlikely to have the necessary skills.

But if the industry could find a way to get going, it could would also nurture a large supply chain comprised of new companies, who would all be employing locals and paying more local tax. Under national content rules, you can only source a supply from outside Uganda if it is unavailable within Uganda.

Overall, as a Ugandan, and CEO of an exploration company, Mr Buringuriza says he feels optimistic, "but there are hurdles to jump. We need to see government especially supporting the growth of the local Ugandan workforce."

"It would be wrong to think there won't be any challenges, but then these challenges are everywhere," he says.

Training

All oil companies active in Uganda are expected to contribute to a "training fund", some hundreds of thousands of dollars a year, and also train Ugandans themselves, and this is embedded in the country's oil and gas laws.

There is a lot of training going on in Uganda, but mostly at a more junior or less skilled level.

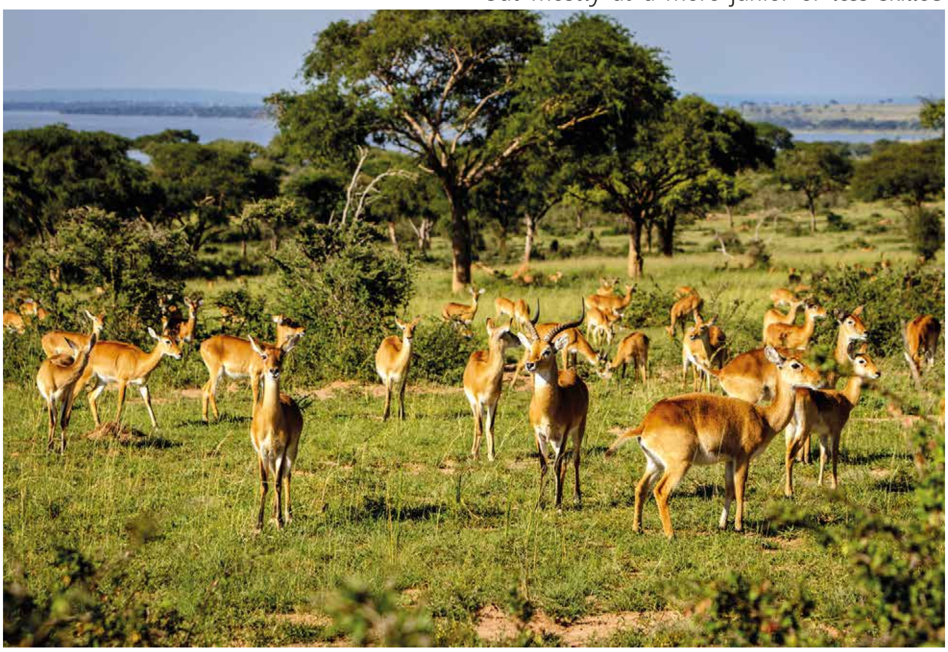
"For me, I think local content needs to be given an opportunity at all levels," he said. "We need to see the white collar local content, because that's where the big money is."

Armour Energy has been able to employ people with no prior skills, including giving internships to Ugandans with academic qualifications.

It might be helpful to use virtual reality tools for training. For example, Mr Buringuriza has a team doing geochemical analysis of soil samples looking for hydrocarbons. They could be trained to do this using a virtual reality simulator. A simulator could also be used to train people how to use seismic acquisition equipment.

"If you can train someone on a simulator to fly an aircraft, why can't you train him on a simulator to drill the ground?" he asks.

Another problem is that Uganda does not have access to the latest data processing technology, and has had to send data to Canada for re-processing. This is another skill which could be taught using simulators.



About Armour Energy

Armour Energy acquired its exploration license in September 2017, taking over from a company which had drilled a dry well.

It spent the first year re-processing data it had acquired, developing environmental plans, and analysing soil samples from the ground and a 20m depth, looking for signs of hydrocarbons. Now the data is being put together in desktop studies, with plans to collect more seismic data, and see if there is something worth drilling exploration wells for.

The company has four full time staff, including a CEO, an exploration manager, a health and safety person and an admin officer, and uses local contractors to do the field work, and local environmental consultancies. All are exclusively Ugandan.

The company also runs training workshops for local suppliers, explaining how to bid for jobs, and how to demonstrate that they can comply with necessary standards.

How oil companies support local training in Mozambique

We spoke to a senior executive of an oil company active in Mozambique

There are many education programs in Mozambique, with multiple donor agencies and government agencies running education programs, for ages from kindergarten upwards, on a broad range of topics, including sanitation and women's health, said a senior executive of an oil company in Mozambique who asked not to be named.

Companies have invested in youth of Mozambique by providing university training, as well as specialty skills training. This positions the graduates for employment opportunities in a growing Energy Industry in the country, as well as positioning them for employment in other companies in Africa, for example Angola, Uganda, Tanzania. Typically these skills development opportunities are funded by companies and donor agencies.

"There will be a tremendous amount of work and capability requirement for the upcoming large LNG developments. There is also a discussion of an onshore pipeline. Specialty skills, like welding, will be in high demand.", the senior oil executive said.

The 'high-end' welding skill requirements is often provided by foreigners – usually from the Philippines, Malaysia, and Indonesia. However, Mozambican welders can initially train under the specialist welders and fill the positions for the long-term – both in Mozambique and in other African countries, like Uganda/Tanzania."

Mozambiquans might also want to go to other Portuguese speaking countries like Angola.

And the requirement for skills and labour in the Middle East, with LNG projects coming online, is far greater than any need in Mozambique, so there may be better opportunity for people there.

Building the economy

Much of the donor money in Mozambique was donated in efforts to rebuild the country after the civil war, which raged for 15 years after independence from Portugal in 1975. This donor money targeted agriculture, the main business sector of the country at the time, and also education, water sanitation and health.

But for the last 5 years, the focus has been on income generating projects, including energy and electrification, including with funds from the World Bank, GIZ (the German Corporation for International Cooperation), and the UK's DFID (Department for International Development).

There is also investment coming from China, going into infrastructure – roads, bridges and buildings – and training a number of Mozambiquans in China.

Mozambique's financial situation has been really hampered by its "hidden debt crisis", with secret loans, but now "they are moving into the big league quickly."