ENTER UGANDA: OIL & GAS, AND ENERGY

ALBERTINE

OIL & GAS SERVICES

INDEX

1. Introduction

1.1 Abstract

This report outlines introductory information on Uganda, including, but not limited to, government and politics, demographics and economics – and contents of the Ugandan oil and gas industry, as well as a brief overview of the renewable energy industry in Uganda.

1.2 Executive Summary

Uganda has seen remarkable peace, stability and economic growth since the late 1980s, under the Presidency of Yoweri Museveni. The Ugandan economy has been able to withstand external economic shocks, like the financial crisis of 2008 and the turmoil of South Sudan in 2011, and is attracting foreign investment. The country has a rich endowment of natural resources, including oil and gas deposits.

Uganda has adopted the policy of Local Content in order to ensure job opportunities for the predominantly young population; approximately 50% are 15 years old or younger. This means that there is a legal requirement that a specified minimum percentage of all services used by any industry needs to come from Ugandans. This is aimed to ensure that Uganda's resources lead to wealth creation for its citizens, not only foreign companies and expatriates.

The oil reservoirs are found in the Lake Albert graben. The reservoirs hold an estimated 6.5 billion barrels of oil, of which 1.4 billion are economically recoverable. There are two major oil fields – Tilenga and Kingfisher. The five licensed operators in Uganda are Tullow Oil (UK), Total (France), CNOOC (China), Armour Energy (Australia) and Atlas Oranto (Nigeria). There are four EPCI's bidding for EPC contracts for the fields – Chicago Bridge & Iron, Fluor and COOC and Petrofac. There are also other blocks of interest.

Kabaale, a parish in the Hoima district, near the oil fields, will be built to become an Industrial Park. The vision includes an airport, a refinery and other facilities related to the industry (e.g, Petrochemical plant). Pipelines from the fields will be built to the refinery in Hoima. From Hoima, a 1,440km long pipeline will be constructed to run all the way to port Tanga in Tanzania, from where it will then be exported to the international market. There is also a proposed pipeline from Hoima to Buloba outside Kampala, where a storage terminal will be set up to serve Uganda's petroleum demand.

Investments are ongoing in the renewable energy sector – and especially within hydropower – to meet Uganda's targeted electricity access and capacity. The relevant program in this field, is the GET FiT program (of which the Norwegian Embassy is actively involved), and the transmission line projects, among others.

1.3 Methodology

Our methodology consisted of a two part research strategy.

- First part - internet research:
  - Websites, Resource Centers (Annual Reports, Newsletters, Surveys, Industry Reports, Vision & Strategy Reports).

  Most common sources online:
  - Uganda Investment Authority
  - Uganda Electricity Generation Company
  - Uganda Renewable Energy, Electricity Alliance
  - Uganda Chamber of Mines and Petroleum
  - Uganda Manufacturers Association
  - Different Company websites

- Second part - primary research:
  - This was the more prevalent form of research during this study. It consisted of extensive interviews and observations, casual conversations (questioning), and networking events. Further, We visited/talked with professionals from:
  - Total
  - Uganda Electricity Transmission Company Limited
  - Kakira Sugar (Madhvani Group)
  - Uganda Chamber of Mines & Petroleum
  - Uganda Manufacturers Association
  - Victoria Engineering Ltd.
  - Norwegian Embassy
  - Association of Uganda Oil & Gas Service Providers (AUGOS)
  - Alex Mbonye Logistics Consultant
  - Makerere University

2. Overview of Uganda

2.1 Brief History

Uganda was a colony from approximately 1894 to 1962. During this time, significant development was made in the country, including the construction of the railway in 1899. Thousands of Indian workers were moved into Uganda to construct the infrastructure, and many remained in Uganda, hence the many Indian companies in the country.

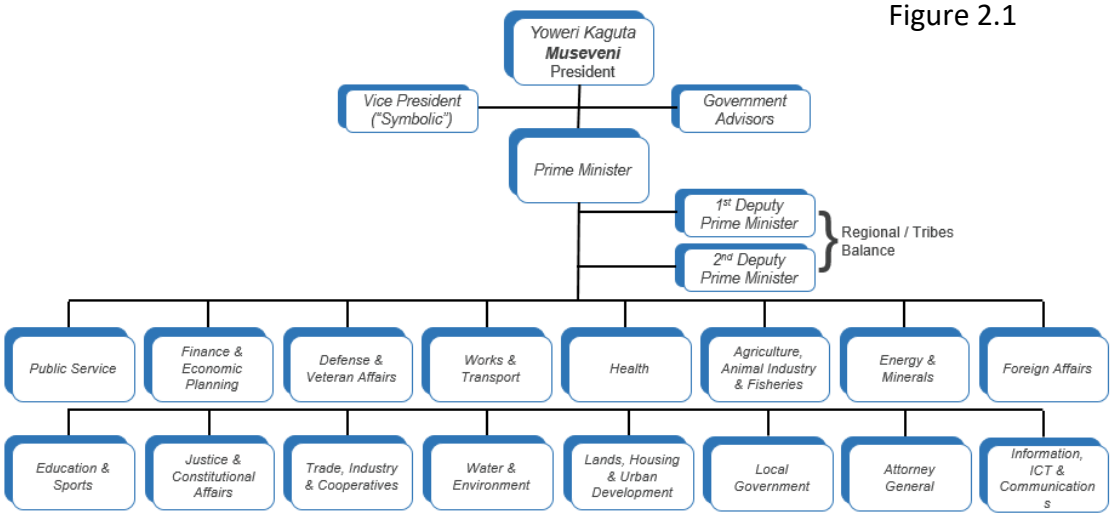
Entebbe was the original capital of the protectorate of Uganda, and so all the administrative infrastructure was centered in that town. Kampala became the capital following Uganda's independence. This is the reason why the national airport is located in Entebbe, not Kampala, the capital.

In 1962, Uganda gained independence and held their first official election. Milton Obote assumed office, followed by Idi Amin in the 70s. Obote took power once gain in the early 80s. In 1986 Yoweri Museveni took control of the country with a hope of ending the turmoil and establishing peace and prosperity. He successfully revived the Ugandan economy and brought stability and consistent economic growth, winning strong support among Western counterparts. Today, Uganda is becoming a very attractive market for foreign investors, both for its natural resources and industrial growth, but also due to the significant stability and order the country enjoys. Uganda has enormous potential and countless business opportunities – the landlocked country is commonly known as *"The Pearl of Africa."*

2.2 Government, Governance and Politics

The government in Uganda is structured as follows:

Figure 2.1



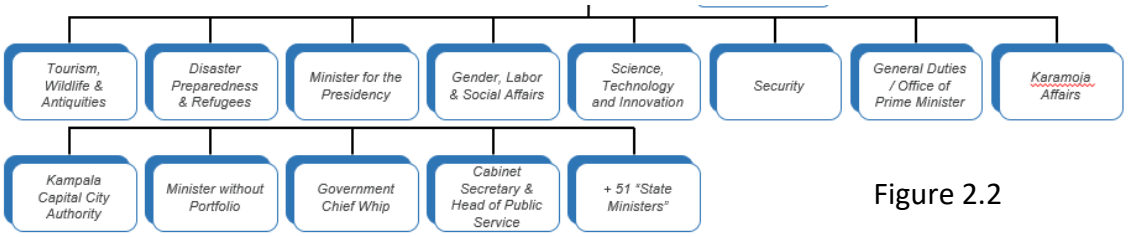


Figure 2.2

Figure 2.3

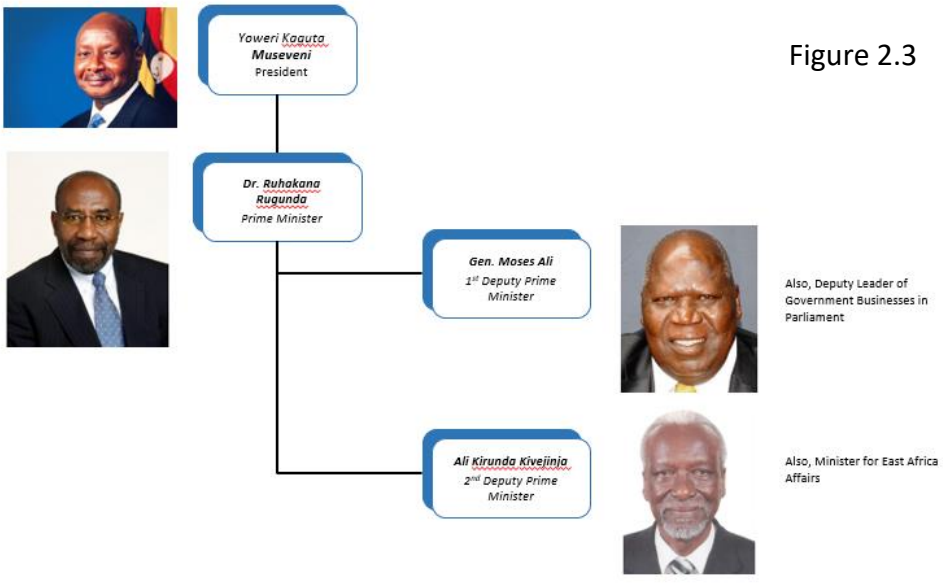
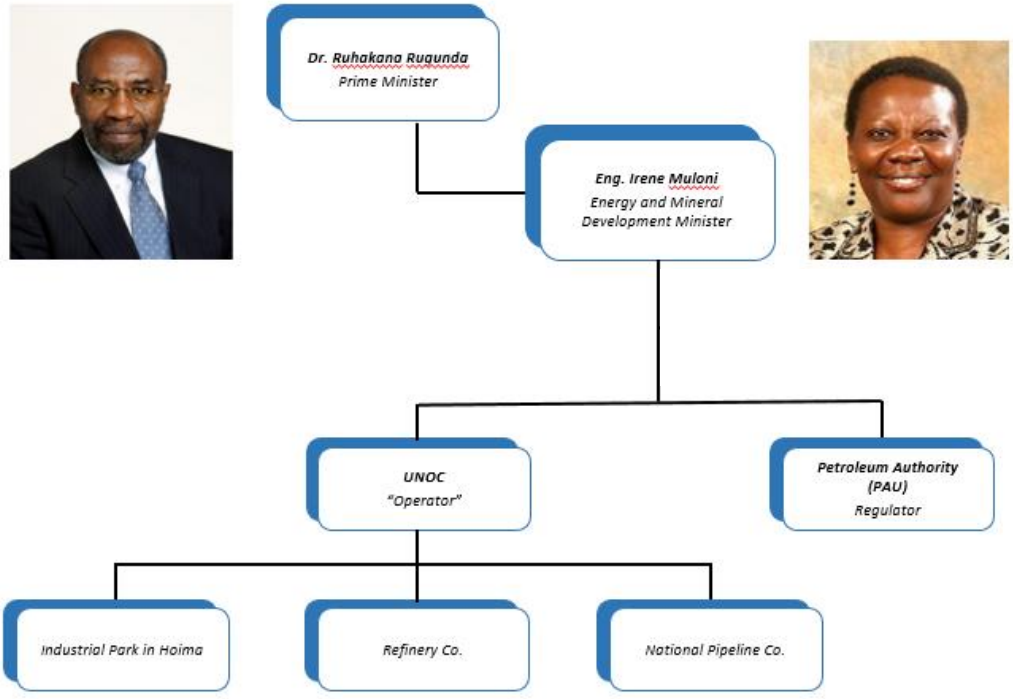


Figure 2.1 is the structure of the government. Figure 2.2 is the Other departments in addition to the ones shown on Figure 2.1. Figure 2.3 details the persons linked to the top governmental roles in Uganda.

The President is the head of state and the head of government of Uganda. He is also Commander-in-Chief of the Ugandan army. He is responsible for implementing and enforcing the laws written by Parliament and, also appoints the Cabinet. The Prime Minister is the leader of government business in parliament and chairs the Cabinet.

The Head of Energy and Mineral Development is Irene Muloni, supported by a Personal Advisor. Her role consists of developing and implementing policies related to electricity. The Ugandan National Oil Company (UNOC) and the Petroleum Authority (PAU) are part of the ministry of Energy

Figure 2.4



UNOC is the national oil company of Uganda, and its role is to handle the State's Commercial interests in the petroleum sector. UNOC has a mandate to hold 15% interest in the nine (9) Petroleum Production Licenses covering fields that are planned to be developed through the Tilenga and Kingfisher Development Projects. This was agreed with the three largest oil exploration companies in Uganda (Tullow Oil, Total, CNOOC) [1]

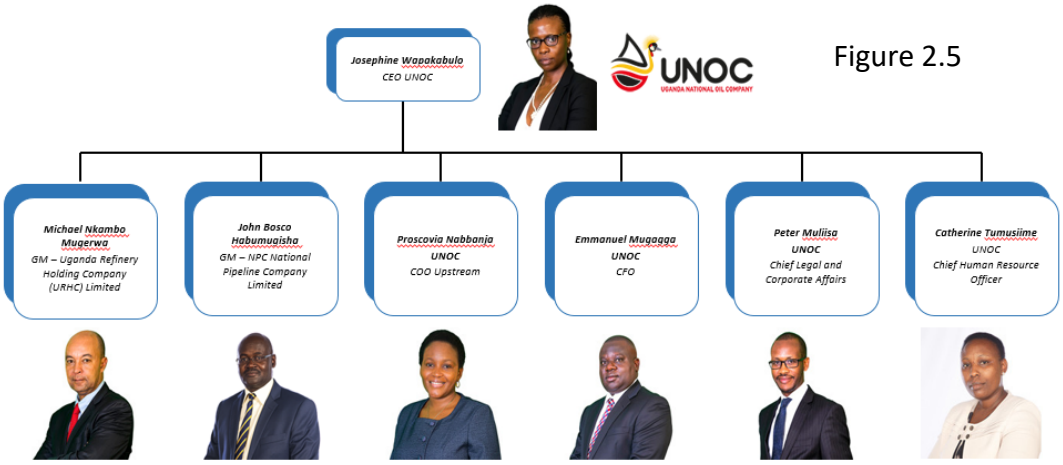


Figure 2.5

PAU is the regulatory authority in Uganda for petroleum exploration, development, production, refining, transportation and storage. They monitor the organisations involved and ensure that all actors comply with Ugandan regulation. [2]

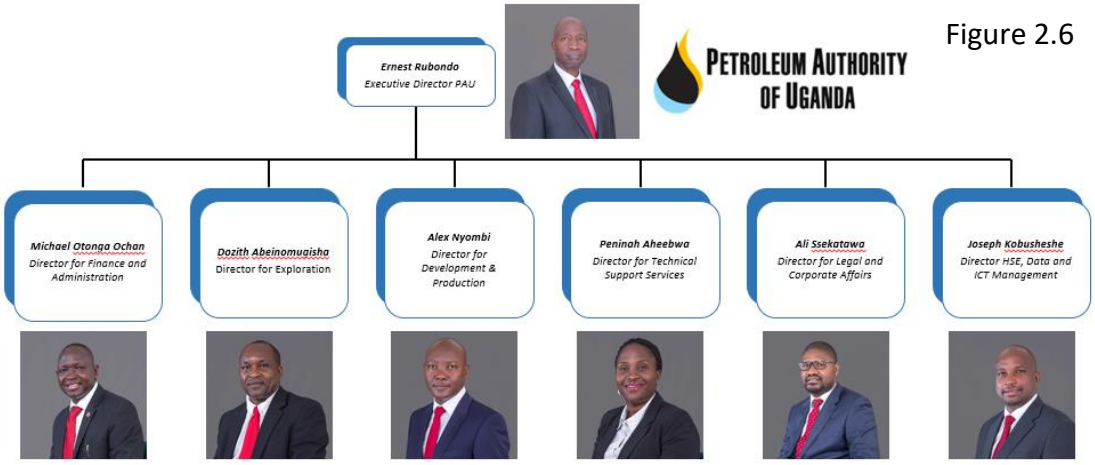


Figure 2.6

In addition to these formal structures, there are also a myriad of associations, institutions, chambers, companies and organisations (many of them government

owned) that assist in facilitating FDI's, transactions, and a feasible business environment. For the energy sector, the most significant organisations are:

- The Society of Petroleum Engineers (SPE) Uganda Section
- Uganda Chamber of Mines & Petroleum (UCMP)
- Uganda Manufacturers Association (UMA)
- Uganda Electricity Transmission Company Limited (UETCL)
- Uganda Electricity Generation Company Limited (UEGCL)
- Uganda Investment Authority (UIA)
- Electricity Regulation Authority (ERA)
- Uganda Association of Consultant Engineers

It is very important for foreign companies investing in Uganda to have the backing and approval of the government, and receive support from the associations and national organisations. Such support will be gained via the company's access to key institutions and government bodies.

It is noteworthy to mention that Albertine Oil & Gas Services has established key connections within Uganda and in the associations. Below is a picture of Albertine's Managing Director (left), and Albertine's Chairman of the Board (right) with the Ugandan Prime Minister (centre) (Figure 2.7), and a selection of photos of Albertine employees with the UCMP (Fig. 2.8), UMA (Fig.2.9) and UETCL (Fig.2.10). Albertine also enjoys strong relations with the Norwegian Embassy and Norwegian organisations relevant for Uganda.

Figure 2.7

Figure 2.8

Figure 2.9

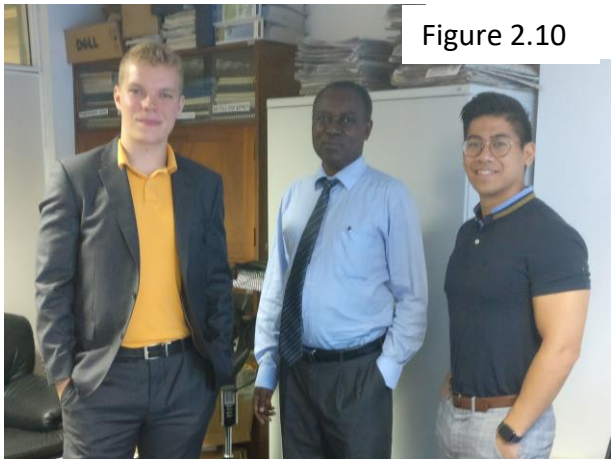


Figure 2.10

2.2.1 Local Content

Uganda has passed a Local Content bill that requires a specified percentage of all service (measured in monetary terms) need to be Ugandan. In the oil and gas industry, local content is at 48%. This means that 48% of all workers and services involved in a project need to be Ugandan. [3]

The local content law was implemented to drive value addition in the domestic economy, develop skills and knowledge in the workforce, improve the welfare of the citizens, and improve Uganda's control over its resources and industries. [4]

However, it also creates a challenge for international organisations that are in need of workers with a required skill-set. The Ugandan workforce lacks skills, and of course experience, in oil and gas projects. There are allegedly only 1,000 fabricators available in Uganda, vastly below the demand. [5] Uganda also severely lacks technicians appropriate for the sector. [6] The Ugandan government is seeking opportunities to establish training programs to educate Ugandans in the required skill sets as soon as possible.

It is crucial for international companies to comply with Local Content laws. Failure to do so could lead to the closure of the non compliant company. It is recommended that a foreign company collaborate with a Ugandan consultancy on this, as Ugandan consultants would have a professional understanding of the legal framework.

2.2.2 Kingdoms

It is important to respect the significance of the Ugandan Kingdoms. Uganda has 5 major kingdoms, Buganda, Bunyoro, Ankole, Toro and Busoga. After Independence in 1962, the monarchs in Uganda didn't have a very cordial relationship with the central government and this led to the abolishment of the kingdoms by the then president, Apollo Milton Obote, in 1967.

They were then reinstated by President Museveni in 1992 as cultural heads, in oder to avoid political turmoil that caused much contention in the past. Although the kingdoms do not participate in politics, they do hold substantial sway over their subjects.

The backbone of Uganda's economy is based on agriculture. Many of the Kingdoms' subjects derive their livelihood from subsistence agriculture, as opposed to commercial agriculture, due to the lack of skills in modern agricultural practices. The Kingdoms look for ways to get their subjects out of poverty, some of which include pushing for various poverty alleviation programmes, including coffee, and food-growing campaigns.

Most of the petroleum fields on which Uganda is relying on for its future economic growth are located around the Lake Albert region of Bunyoro. The Bunyoro King recently dissolved the Kingdom cabinet and appointed a new Prime Minister who is a geoscientist and set up a task force headed by a senior partner of KPMG. The task force is to establish management and administrative structures to formulate a 30-year strategic plan for the Kingdom, in anticipation of the oil revenues.

2.2.3 Geopolitics

Uganda is a landlocked country, having naval access only to Lake Victoria and Lake Albert. It is bordered by the Democratic Republic of Congo (DRC), Rwanda, Tanzania, Kenya and South Sudan. Uganda's only feasible access to maritime trade, therefore, is via Kenya's Port Mombasa or Tanzania's Tanga port or Dar Es Salaam. Historically, Uganda has relied heavily on Mombasa in order to engage in international trade, which has profited Kenya significantly.

Recently, Uganda signed a joint cooperation agreement with Tanzania that involved using Dar Es Salaam and port Tanga as alternatives to Mombasa for international trade.

The agreement also involves construction/upgrading of the railway from Tanga to Mwanza in Tanzania, and a maritime trade route across Lake Victoria from Mwanza port to Port Bell (Kampala) and Jinja harbour in Uganda. [7] This has slightly shifted the geopolitical balance in the region, and hopefully will lead the Kenyan government to offer more competitive terms for Uganda.

The turmoil in South Sudan in 2011 caused a slump in Ugandan exports and tested the Ugandan economy significantly, as it received an influx of South Sudanese refugees. [8] However, the Ugandan economy has recovered well since the impact.

The DRC is one of Uganda's main trading partners, as they share a long border and Lake Albert. The eastern region of the DRC however, is plagued by rebel groups, making Eastern DRC a complicated area for trade and infrastructure development. For example, this is why transmission line projects going *into* the DRC have been delicate projects to handle.

2.3 Demographics

Uganda has one of the most rapidly growing populations in the world – and more significantly, one of the youngest populations in the world. 48.47% of the population are below 15 years old; 21.16% of the population are in the 15-25 age group – thus, roughly 70% of the population is below 25 years of age. Just 2.5% of the population are 65 or older. This youth dependency ratio gives the country an immense workforce potential, but also with a major challenge in job creation and fertility rate management (the Total Fertility Rate of Uganda averaged 6.9 over the past decade). [9] The end of the Uganda civil war (Idi Amin era) and resurgence of economic growth under Museveni, is said to be a main cause for the high fertility rate at the end of the 1980s.

Moreover, the population is not looking to decrease any time soon. Although fertility may reduce slightly, the UN World Population Prospects still forecast, at the lowest, 80 million people in Uganda by 2050. This is caused by the population momentum phenomena, which is especially fueled by a young age population. [10]

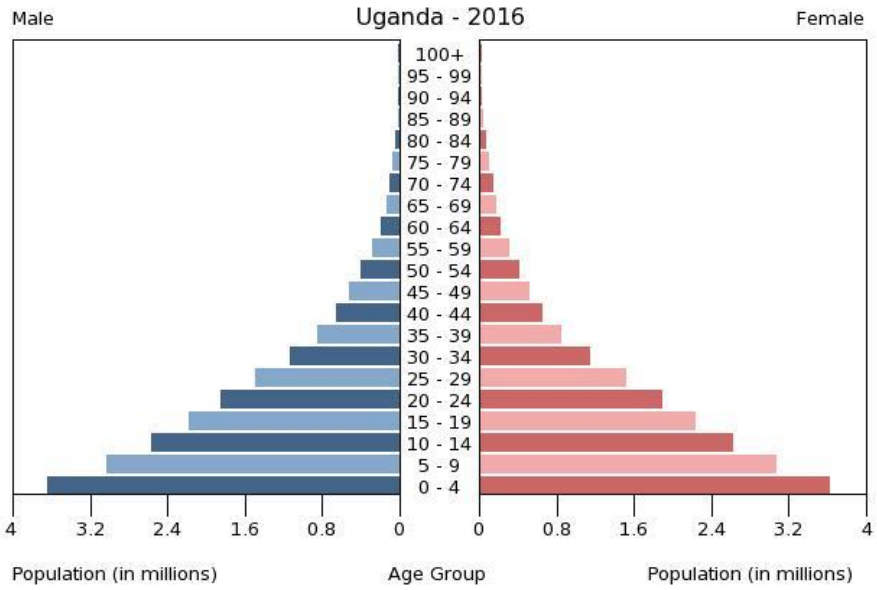


Figure 2.11: Population growth forecasts based on high to low fertility variants
(Courtesy: UN World Population Prospects)

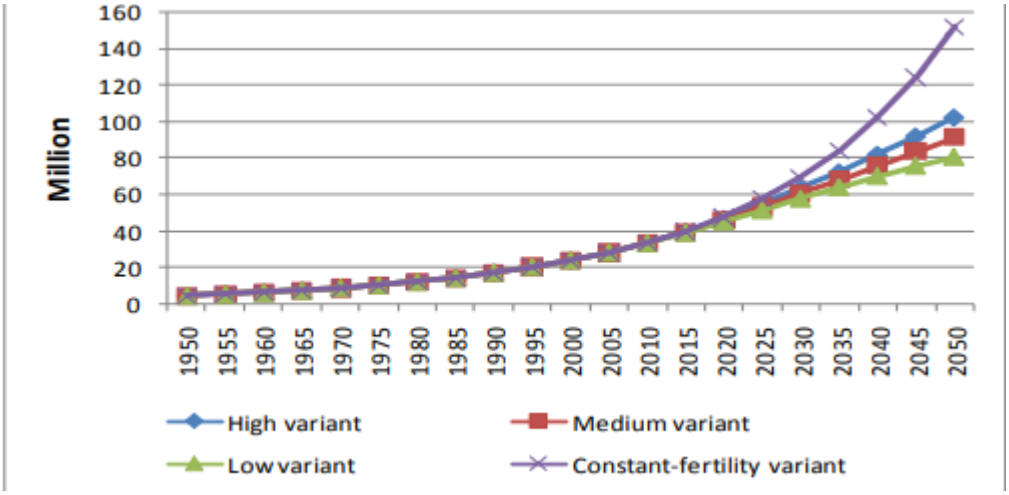


Figure 2.12: The Age Distribution of Uganda
(Courtesy: Central Intelligence Agency, *The World Factbook*)

Uganda is a mosaic of different tribes. The most populous tribe in Uganda is the Baganda (16.5% of the population), followed by Banyankole (9.6%), Basoga (8.8%) and Bakiga (7.1%) and many other, smaller tribes.[11] Roman Catholicism is the religion of 39.5% of the population, followed by Anglican Protestantism (32%), Muslim (13.7%) and Pentecostal (11.1%). [12]

The official national language in Uganda is English and Kiswahili. English is taught in schools, so virtually everyone speaks English. Newspapers, radio broadcasts, advertisements, restaurant and shopping staff, courts of law and business environments are all in English. As a foreigner, English is the only language required to speak. However, Ugandans also speak Luganda, which is sometimes preferred among natives. Kiswahili is generally understood by Ugandans and is the language used in the military and police, however, the general population uses it sporadically. There are also a myriad of uniquely different tribal languages that are distinct from each other in phonetics, grammar and vocabulary, but these are never used in any official or public context.[13]

The population has a density of about 207 per sq.km (2016), and there is relatively low urbanization. 16.8% of the population live in major cities, the rest are spread across thousands of villages and farmlands across the country. [14] The largest city is Kampala (population: 1,315,189), the capital, followed by a series of cities and towns at roughly 100 000 inhabitants each (Gulu, Mbarara, Jinja, Lira). [15]

2.4 Economics

Uganda has been praised for its success in achieving an annual compound growth rate of 8% (1990 – 2013), withstanding external economy shocks (like the financial crisis in 2008 to 2011, during which the economy still grew by 3%[16]) and its financial liberalisation of exchange rates, monetary policy, central bank independence and capital controls. However, the economy is facing challenges to keep up with high youth dependency rates and a fast expanding population. [17]

Uganda has substantial natural resources – fertile soils, regular rainfall, hydropower from the Nile (the source of the Nile is in Uganda, flowing from Lake Victoria), deposits of minerals and precious stones, and recoverable oil. Agriculture is the most important sector in the economy with regards to employment (employs 72% of the working population).

The Ugandan economy has traditionally been based on exporting animal and vegetable bi-products, precious metals (gold), unprocessed foods (coffee, tea, tobacco, cocoa) and animal products. Gold and coffee are the country's largest exports. It's top export destinations are the UAE, Kenya, Rwanda, South Sudan and the DRC.

The country imports refined petroleum, packed medicaments and instruments, palm oil, trucks and cars. It's top import origins are China, India, Kenya, Japan and the UAE.

Uganda has been trading at an expanding deficit. Imports value around $4.81B (2016) and exports at $2.85B (2016), with a deficit of $1.96B (2016). GDP stands at $24.1B and GDP per capita at $1.82k. The economy has a low-to-medium economic complexity.[18]

2.4.1 Industry

Uganda has a small industrial sector that relies heavily on imported goods, like refined petroleum, heavy industrial equipment, machines, vehicles, instruments and tools. This makes it difficult for Ugandan exporters of raw materials to advance into exporting finished goods, as such a move would require major purchases of international goods and a lean supply chain to sustain it. This is especially challenging as the limited regional infrastructure, the limited trade liberalisation (tariffs and duties between countries is a present problem for multinational companies and international supply chains) makes supply chains in Africa expensive and difficult to establish. Thus, Uganda keeps exporting raw materials to foreign manufacturers, only to import the finished goods back again at higher prices.

Thus, the top industries in Uganda are in agriculture (robusta coffee, sugar, tobacco, cocoa), textiles, brewing, fishing, cement and steel. The mining industry has historically been strong, but declined significantly over the past years. The government is implementing regulation that both compels and incentivizes license holders to restart exploration and production.[19] Manufacturing mostly consists of light consumer goods, bottling and some plastics products. [20]

Industrialisation is viewed as a highly-needed solution to Uganda by the government and banking officials. [21] That is what makes the oil and gas projects in Uganda, and in particular the refinery project, very important (see 3. Upstream).[22]

3. Upstream

Oil and gas in Uganda is discovered in Western Uganda, by Lake Albert. There are an approximated 6.5 billion barrels of oil, with about 1.4 billion barrels of economically recoverable oil.

Uganda's negative trading balance would be significantly improved if Uganda could produce refined petroleum domestically, rather than importing it. This turns Uganda from being a net importer, to becoming a net exporter of oil and gas. Income from such exports would be an invaluable resource for the government to invest in other sections, like infrastructure and education.

The oil and gas industry of Uganda consists of the following projects:

- Tilenga Field
- Kingfisher Field
- Ngassa Shallow/Deep Play Blocks
- Kanywataba Block
- Hoima Refinery (and Industrial Park)
- Interconnection pipelines from Tilenga/Kingfisher to Hoima
- 1,440km Pipeline from Hoima to Tanga in Tanzania
- Storage Terminals in Hoima and Buloba

These projects are forecasted to add up to 13 000 direct jobs and 150 000 indirect jobs for Ugandans during the construction phases, making a valuable contribution to Uganda's job creation campaign. After construction, the job demand will stand at around 5000 for maintenance and management work. [23] Jobs will also be created in Tanzania for the same reasons. Thus, these projects become an economic "game changer" not only for Uganda, but for East Africa as well.

Tullow Oil (UK), Total (France), China National Offshore Oil Company – CNOOC – (China), Armour Energy (Australia) and Atlas Oranto (Nigeria) are the five authorized operators of the oil fields in Uganda, in cooperation with UNOC.

These three completed an Industrial Baseline Survey in 2013 that outlined the projects requirement and predicted impact on the Ugandan economy. As of 2018, the projects are under the FEED stage where procurement, engineering and constructions service

companies Chicago Bridge & Iron (CB&I), Fluor and China Offshore Oil Engineering Company (COOEC) are competing for EPCI contracts. The Final Investment Decision (FID) is scheduled to be taken in 2019.

3.1 Tilenga Field

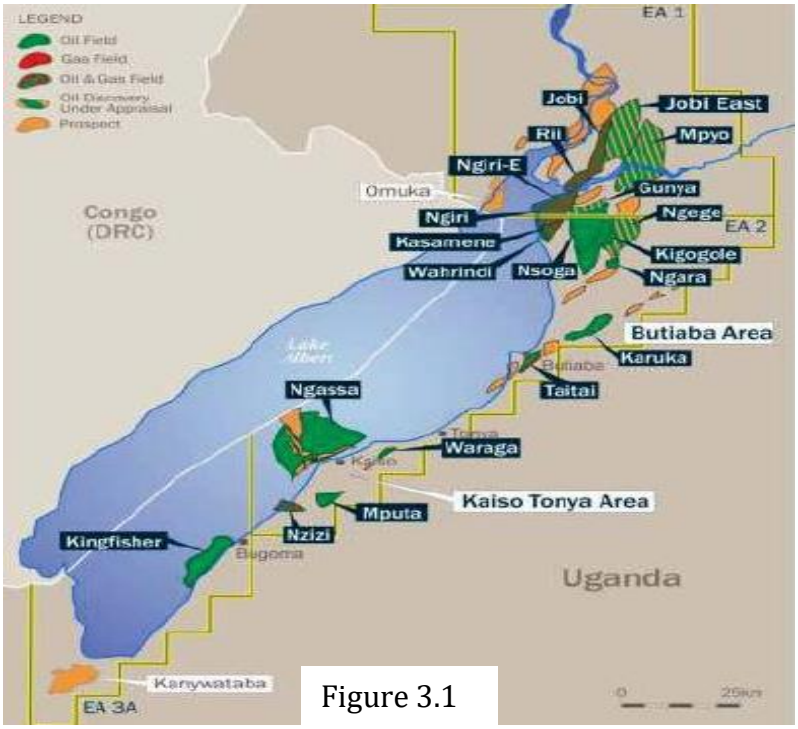


Figure 3.1

Tilenga is situated in the northern area Lake Albert. It consists of 30 well pads with pipelines transferring the estimated 190,000 – 200,000 barrels of oil per day to a central processing facility. Due to excess gas, Total is considering setting up a gas power plant in Tilenga, as well. Both Total and Tullow Oil are involved as operators here.

Chicago Bridge & Iron (CB&I) and Fluor are competing for the EPCI contract which includes more than 412 production wells, including 189 injectors, 190 producers and 33 observers. Fluor has teamed up with China petroleum Engineering & Construction Corporation in the tender, while CB&I are working with Sinopec.

The Tilenga field overlaps into Murchinson National Park. The nature here is strictly monitored and protected as well as very valuable to Uganda. It is therefore crucial that

all activities in Tilenga are done with utmost respect for laws and regulation on practices to protect the environment.

3.2 Kingfisher Field

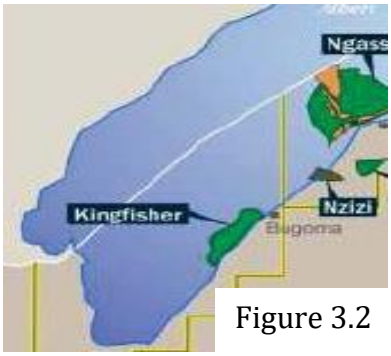


Figure 3.2

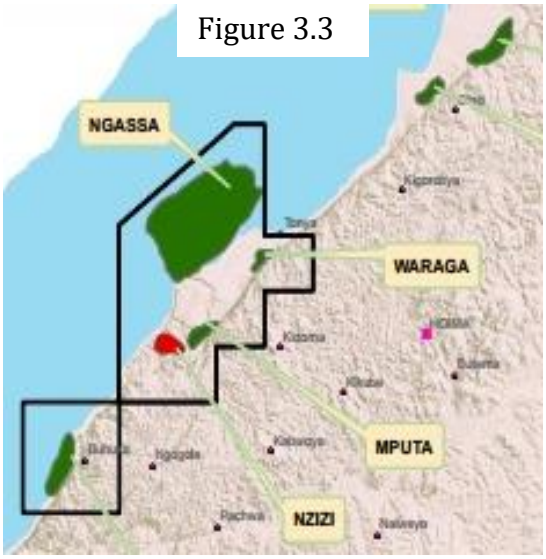
Located in the South of Lake Albert, Kingfisher is operated by Chinese Firm CNOOC and its partners, Total and Tullow. Production of the Kingfisher field is expected to start in 2021.[24] CNOOC plans to pump 40,000 barrels of crude a day from the field.

Petrofac and China's Offshore Oil Engineering Company (COOEC) are both interested in providing engineering, procurement and construction services for CNOOC's Kingfisher development. The tender covers 4 packages outlining different work scopes:

EPC-1: Pre-drilling work for three drilling pads
EPC-2: Permanent camp, supply base, safety check station and civil works on the well pads.
EPC-3: Covers the central processing facility (CPF), infield flow lines and a lake water intake station. (Most likely going to Petrofac)
EPC-4: A 50 km feeder pipeline.

3.3 Ngassa Shallow/Deep Play Blocks

Figure 3.3



Tullow Oil previously held operation license for the Ngassa Blocks and discovered a shallow gas layer, and a deep oil layer. Currently, a Nigerian company, Oranto Petroleum, has taken over as operator of the block. Oranto Petroleum is currently discussing with EPCs China's Wilson Group and Dietswell (of France) on the best way to drill in that area.

Oranto has assessed contingent resources and has estimated more than 311 million barrels of oil in place. The company is undertaking studies before it can engage in any heavy exploration works. [25]

3.4 Kanywataba Block

The Kanywataba block is, similarly to the Ngassa block, located in Turacco and is in the exploration stage. The block is awarded to Armour Energy (of Australia). Armour has reached an agreement with the Australian resource enterprise DGR Global to place the Kanywataba asset into a special purpose company prior to exploration. The arrangement is that Armour will retain 16.82% of the entity.

The initial work program consists of geological and geophysical investigations and the acquisition of 100 km of 2D line seismic. The Kanywataba license is renewable for a further two year period in which there is plans to drill a well.[26]

4. Midstream and Downstream

4.1 Refineries and Hoima Industrial Park

The Ugandan government has an undergoing strategy to develop an Industrial Park in the Hoima district, close to the oil fields. The park is scheduled to consist of a refinery, an airport and other facilities of related functions. The Hoima Refinery project is known as the *Uganda Refinery Project.*

A preliminary agreement was signed in April between the Ugandan Ministry of Energy and Mineral Development, UNOC and a consortium of investors – including, but not limited to, Nuovo Pignone International SRL (a subsidiary of General Electric), YAATRA Africa and Lionworks Groups Ltd to construct the Hoima refinery. Construction will cost around $3 billion to $4 billion. It will receive unprocessed hydrocarbons from the Tilenga and Kingfisher oil fields by pipelines, then process the hydrocarbons at a planned processing capacity of 60 000 barrels per day. Diesel, petrol, kerosene, jet fuel, liquified petroleum gas (LPG) and heavy fuel oil (HFO) will be produced.[27]

The construction is estimated to create 4000 to 6000 temporary jobs, while maintenance of the refinery will see 650 permanent jobs.[28]

4.2 Pipelines and Distribution

The processed fuels will be further distributed across Uganda, but also in parts of Rwanda, Burundi, South Sudan, DRC, Kenya and Tanzania, by both pipelines and trucks. The largest and most advanced pipeline is the East Africa Crude Oil Pipeline (EACOP).

4.2.1 East Africa Crude Oil Pipeline (EACOP)

This pipeline will be constructed and operated through a pipeline company with shareholding from UNOC, Tanzania Petroleum development corporation and three oil companies: CNOOC, Total and Tullow. EACOP is a 1445km crude oil export pipeline that will transport Ugandas crude oil from Kabaale-Hoima in Uganda to the Chongoleani Peninsula near Tanga port in Tanzania. The pipeline will be underground to minimize the impact on the environment. Because the oil has a low API gravity (is heavy), fiberoptic cables will be installed to heat the pipeline and make the oil more fluid.

US contractor Gulf Interstate Engineering has completed front-end engineering and design work on EACOP — plus a 95-kilometre section between Tilenga and Kabaale — and is battling to land an engineering, procurement and construction management contract covering the 24-inch diameter, 216,000 bpd line. The successful EPC contractor will carry out detailed engineering and develop bid documents for EPC contracts for the pipeline.

Other EPC contracts to be tendered will cover pump stations, electrical instrumentation and telecommunications, early civil works, logistics and inland transportation, marine terminal storage tanks and marine jetty.[29]

EACOP is expected to be debt-financed with some 70% of capital sourced from international lenders and the remainder via equity from the project partners.

A special purpose vehicle — PipeCo — would negotiate the shareholder's agreement together with project financing and transportation agreements by accessing international markets. PipeCo would then repay lenders from the project's returns.

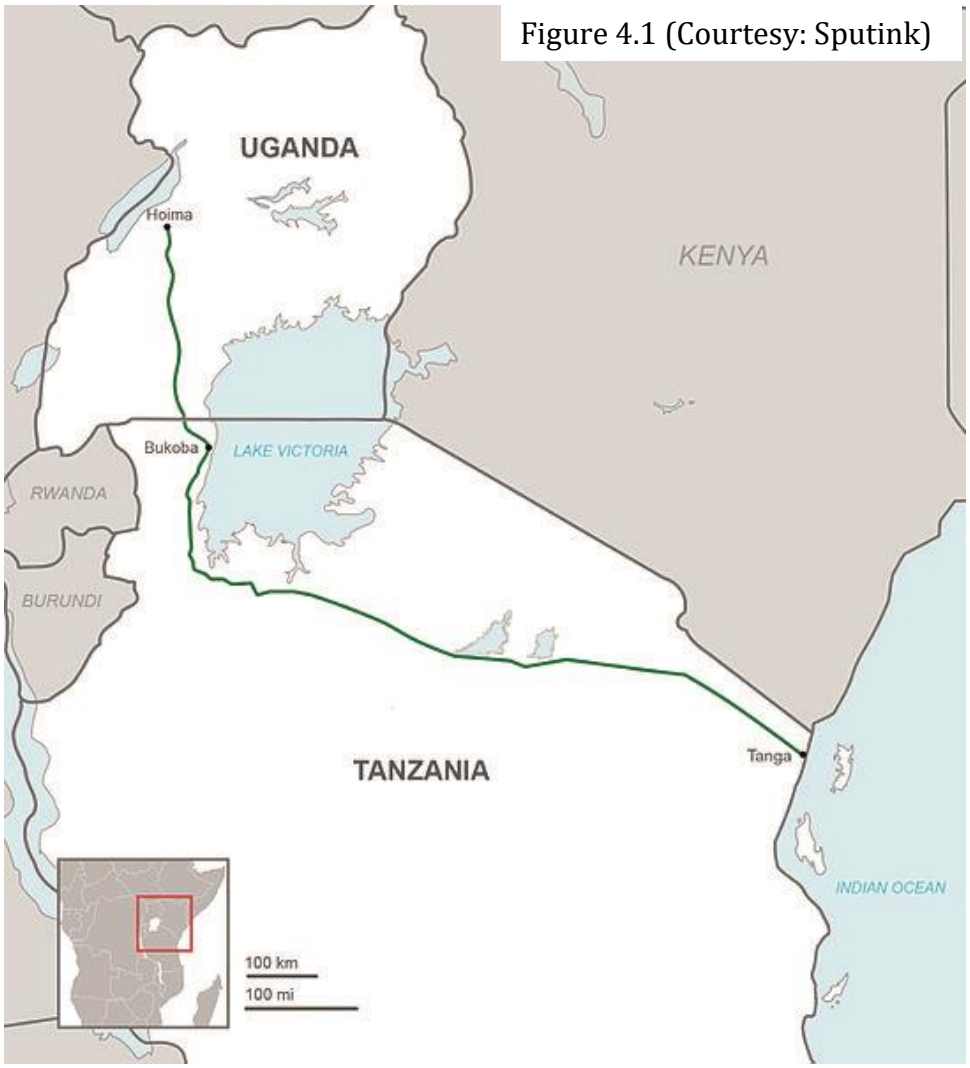


Figure 4.1 (Courtesy: Sputink)

4.2.2 Other Pipelines

In addition to EACOP, there are interconnection pipelines from the Tilenga and Kingfisher fields to Hoima Industrial Park to transport the crude oil and gas to the refinery.

There is also a proposed pipeline from Hoima Refinery to the Kampala Storage Terminal (KST) in Buloba, outside Kampala. It should be 110 km.

4.3 Downstream – Storage and Retail

Refined fuel is transported by trucks primarily from Kenya to the tank farms of each major city in Uganda. Fuel is stored in storage tanks. The fuel is then distributed by trucks to the various petrol stations around the city and country.

Uganda's downstream sector is large, with Total and Total's GAPCO as well as Shell's Vivo Energy are the major plyers in terms of petroleum retail. Both GAPCO and Vivo own and run tank farms in Kampala and various cities across Uganda to supply their fuel stations.

For national storage facilities, there is a current facility in Jinja run by UNOC with a storage capacity of 30 million liters – the Jinja Storage Terminal (JST). It is situated in Jinja, in Eastern Uganda, as Uganda has traditionally imported refined petroleum from Mombasa port (Kenya).

However, with the emergence of refined petroleum products from Hoima, a new and larger storage terminal will be built near Kampala – the Kampala Storage Terminal (KST). This will have a storage capacity of 240 million liters. KST will serve as the central hub for development of regional pipeline infrastructure and storage terminals across Uganda. There is 300 acres of land that was acquired and a master plan that has been completed. UNOC is currently working on securing strategic partnerships for the project.[30]

5. Renewable Energy

According to IMF Lagarde, energy and electricity are real economic bottlenecks for Uganda, hindering real and efficient development. The government is invested in solving this, and they are therefore major opportunities in energy and electricity industries.

Hydropower, geothermal, biogas and solar projects have received significant financing the past five years. This is in the context of the Electricity Regulation Authority's (ERA) goal of accelerating electricity access and grows demand, ensure reliable power and quality of service and provide affordable tariffs by reducing transmission losses, expanding electricity generation capacity and further develop the national grid. Generally, Uganda has a major challenge in increasing its electricity capacity and distribution quality. Only 20% of their population reportedly has access to the grid, but

frequent power cuts disrupt business activity and is a stumbling block for Ugandan socio-economic development. The goal for 2020 is as follows:

Uganda 2020:

- Predicted Demand: 6,127 MW
- Predicted Capacity: ca. 1,863 MW
  - Current 900 MW
  - Karuma & Isimba (large hydropower plants): 783 MW aggregate
  - GET FiT projects (small hydropower plants & solar panels): 180 MW aggregate
- Supply/Demand: 30.4%
- Predicted Accessibility Increase: +10% (from 20% to 30%)
- Required investment to reach this target: $650m
- Local Content for Electricity Project: 68%.

We would also like to mention, for the sake of awareness, that Uganda also has a significant geothermal potential. However, due to uncertainty of the actual power generation capacity of Uganda's geothermal sites (which requires costly exploration drilling, making geothermal projects risky) and the relatively high initial capital needed, this industry is not expected to gain traction any time soon. There are simply too many cheaper, easier and more attractive projects ongoing (Hydropower, biogas and solar).

5.1 Hydropower and GET FiT

The large Hydropower plants (HPP) are usually dominated by Chinese organisations (EXIM Bank, Sinohydro, China International Water & Electric Corporation…etc.), with a few exceptions. There are 5 large HPP – Bujagali (completed), Kiira (completed), Nalubaale (completed), Isimba (construction) and Karuma (construction). Thus, large HPP opportunities seem to be closed for the next 10-20 years.

However, there is also a program called GET FiT Uganda with the aim of setting up 17 mini-hydro power plants and solar power generation sites. Most of these sites are still in their initial stages. However, the GET FiT plants are of very small scale, generating power from 8MW to 16MW each.

GET FiT is an international program with the objective of developing renewable energy capacity in East African nations. GET FiT Uganda is run by the Government of Uganda, Electricity Regulation Authority (ERA) and the German KfW Development Bank. GET FiT Uganda receives heavy support by the governments of Norway, the United Kingdom and Germany and the EU through the Africa Infrastructure Fund.

So far, six of the GET FiT projects already commissioned and are operational, adding 58 MW to the national grid. Three projects are nearing completion (will be completed in 2018). The resulting projects will either be commissioned in 2019 or 2020 (GET FiT and developers predictions). All the current solar panel projects (Soroti Solar, Tororo Solar) for GET FiT have already been completed.

6. Comments

Albertine Oil & Gas Services was established in Kampala, Uganda to provide technical consulting services and commercial representation for companies that wish to operate in the Ugandan market and are seeking sustainable, value adding solutions.

Albertine represents both large international and local Ugandan companies and operates now in both Uganda and Kenya.

Albertine also enjoys relations with the Norwegian Embassy in Uganda and other Norwegian organisations.

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