



THE REPUBLIC OF UGANDA

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT



THE OIL AND GAS SECTOR IN UGANDA: FREQUENTLY ASKED QUESTIONS

DECEMBER 2014

FOREWORD

The Ministry of Energy and Mineral Development is glad to present this booklet on Frequently Asked Questions on the Oil and Gas Sector in Uganda.

The journey to confirm the existence of commercial petroleum resources in Uganda started during the colonial days. Oil seeps were mapped and documented and thereafter wildcat shallow wells were drilled in Kibiro (Hoima), Butiaba (Buliisa) and Semliki valley based on these seepages. These efforts were, however, interrupted by the Second World War and later by colonial policy which zoned the East African region for Agriculture. The political turmoil that existed in Uganda in the 1970s after Independence did not make Uganda an attractive investment destination for petroleum exploration.

In the mid-1980s with stability returning to the country, more consistent efforts were undertaken including data acquisition by Government geoscientists, packaging the data for promotion, capacity building and institutional development. These efforts were successful as international oil companies were attracted to invest in petroleum exploration in Uganda in the late 1990s.

The year 2006 became a milestone when on 6th January 2006, the Mputa-1 well struck oil and was declared the first commercial discovery. Since then tremendous success has been recorded in the country's emerging oil and gas sector and various achievements made in the sector's development. Uganda's petroleum resources have grown from 300 million barrels in 2006 to 6.5 billion barrels of oil in place in 2014; the legal, policy and institutional framework for the sector has evolved; best practice technology is being utilized in the country; and frameworks to ensure stakeholder engagement, participation of Ugandans in the sector, environment protection and robust revenue management are in place.

The country has now progressed from the exploration and appraisal to the development and production phases of the petroleum value chain. Plans to put in place infrastructure such as processing facilities, pipelines and a refinery to support production are in advanced stages. It is expected that by 2018, Uganda will have joined the ranks of oil producing countries. For the East African region, the success in Uganda de-risked the entire East African rift system for petroleum exploration and development.

This publication presents an overview of the petroleum industry with specific reference to the developments in Uganda's oil and gas sector. It is our hope that the answers to the questions presented herein will enhance the public's understanding and appreciation of the progress that has been made in the sector. Government is committed to ensuring that the petroleum industry will indeed contribute to economic take off of our nation and create lasting value to all Ugandans.

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GENERAL

1. Where in Uganda is Petroleum (Oil and Gas) Exploration taking place?

Oil and Gas Exploration in Uganda is currently taking place in the Albertine Graben (figure 1). The Graben is part of the East African Rift System and runs along Uganda's western border with the Democratic Republic of Congo (DRC). The Graben is approximately 500 km long, averaging 45 km in width and 23,000 square kilometres in Uganda.



Figure 1; Location of the Albertine Graben

2. What is the Petroleum Value Chain?

The Petroleum Value Chain (figure 2) is the series of activities starting from exploring for oil to consumption of petroleum products. The Petroleum Value Chain has three major phases, namely; upstream, midstream, and downstream. **Upstream** covers exploration, development and production of petroleum together with decommissioning. Exploration refers to the search for petroleum accumulations and includes appraisal of the same to establish the extent (distribution) of the petroleum accumulation below the earth's surface and the ease of flow of the petroleum from this accumulation. Development involves preparing for production by putting in place facilities and infrastructure for collection, transportation and processing of crude oil and gas. Production is the removal of petroleum from the accumulations below the earth's surface to the surface, and preparing the petroleum for transportation and refining. **Midstream** includes bulk transportation of petroleum commodities (crude oil and natural gas) and products (gasoline, diesel, jet fuel, etc), refining of oil and conversion of gas. It also includes converting oil and gas into marketable products and chemicals. **Downstream** deals with distribution, marketing and sale of petroleum products. In some countries, downstream and midstream operations are considered together as downstream operations.

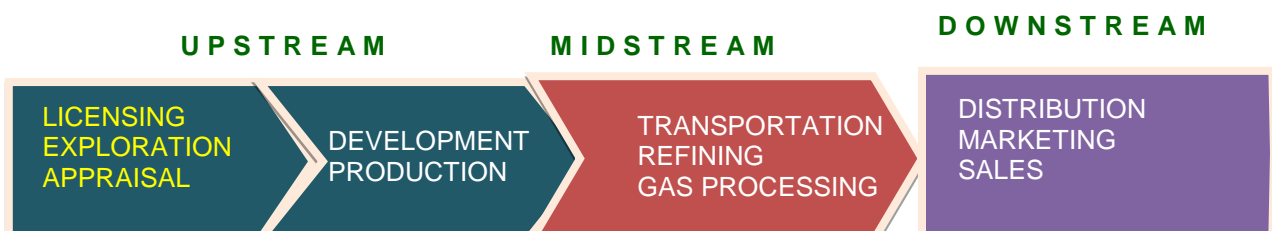


Figure 2: The Petroleum Value Chain

3. When did Uganda confirm commercial oil and gas resources?

Uganda confirmed commercial petroleum resources in 2006. Efforts to find oil in Uganda started as far back as the 1920s. These efforts led to the identification of surface seepages of oil and drilling of shallow wells around these seepages before 1945. One deep exploration well (Waki-1) was also drilled near Butiaba, in Buliisa district during 1938. These initial efforts were not successful in establishing commercial deposits of petroleum in the country. Renewed and consistent exploration efforts commenced in the 1980s which culminated into confirmation of commerciality of the petroleum in Uganda.

4. How much oil has been discovered in Uganda?

The estimate resources in the country have increased from 300 million barrels in 2006 to 2 billion and 3.5 billion barrels in 2010 and 2012 respectively. As at June 2014, the discovered resources in the country were estimated at 6.5 billion barrels of oil equivalent in place with about 1.4 billion barrels of these resources recoverable (1 barrel is equivalent to 159 litres). The area explored presently represents less than 40% of the total area with the potential for petroleum production in the Albertine Graben. There is therefore potential for additional petroleum resources to be discovered in the country when additional exploration is undertaken.

5. Can all the 6.5 billion barrels of oil in place be recovered?

Geological factors including the fact that oil in the subsurface is stored in rocks with pores (similar to water in a sponge) and within structures, makes it impossible to recover 100% of the resources. The amount of oil to be recovered depends on the properties of the rock such as how the pores within the rock are connected to one another, reservoir pressures and type of oil, among others. Globally, an average of 20 to 30 per cent of the oil in place is recovered economically using the available technologies. Enhanced Oil Recovery (EOR) methods are also often used to increase the amount of oil recovered from an oil field using different technologies to supplement the natural production. EOR is used to improve movement of oil in the oil field and the different methods of EOR include polymer flooding, gas injection, and steam flooding.

6. How many Petroleum discoveries have been made in Uganda to date?

Twenty-one (21) oil and/or gas discoveries have been made in Uganda to date as shown in figure 4.



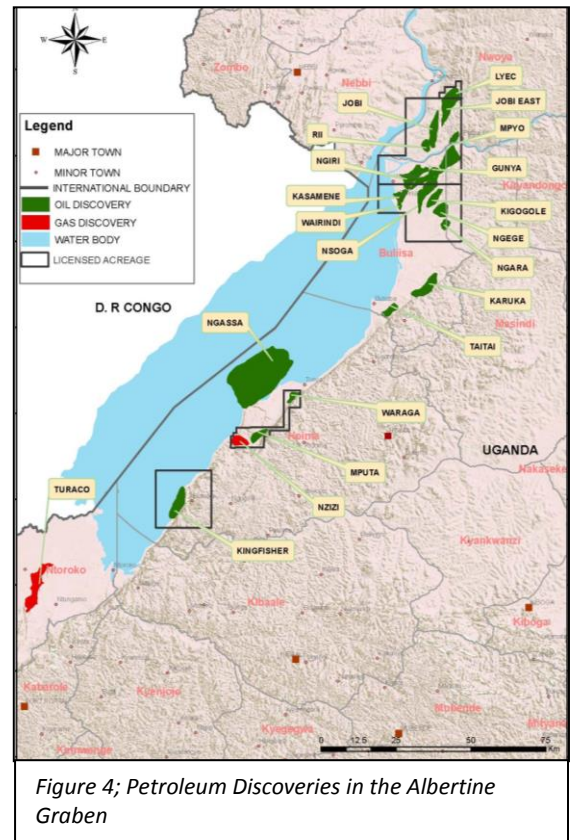
Figure 3: Caroil 2 drilling rig

7. Which oil companies are licensed in Uganda?

The oil companies currently licensed to explore, develop and produce petroleum in the country are; Total E&P Uganda BV., Tullow Uganda Operations Pty Ltd, Tullow Uganda Limited and China National Offshore Oil Corporation (CNOOC) Uganda Limited. These companies are joint licensees in Exploration Areas 1&1A, 2 (Northern Lake Albert Basin) and the Kingfisher Discovery Area in the Southern Lake Albert Basin.

8. Which parts of the Albertine Graben are these companies responsible for?

Total E&P Uganda B.V is operating **Exploration Areas 1 and 1A** and seven petroleum discoveries have been made in this area. These are: Ngiri, Jobi, Rii, Jobi-East, Mpyo, Gunya and Lyec. Tullow Uganda Operations Pty Ltd is operating **Exploration Area 2** and this area has a total of nine discoveries and these are Ngege, Kasamene, Kigogole, Wairindi, Ngara, Nsoga, Mputa, Nzizi, and Waraga. The **Kingfisher Discovery Area** is operated by CNOOC (U) Ltd and it has one discovery, the Kingfisher Discovery. Four discoveries; Taitai, Karuka, Ngassa and Turaco are currently not under license.



9. Who owns the oil and gas resources in Uganda?

Article 244 of the Constitution of Uganda vests the ownership and control of minerals and petroleum in the Government on behalf of the people. The Government therefore holds all resources in trust for the people of Uganda. The Constitution also empowers Parliament to make laws regulating the exploration and exploitation of minerals and petroleum. In this regard, Section 4 of the Petroleum (Exploration, Development and Production) Act 2013 vests petroleum resources in the Government on behalf of the people.

10. How long will the country's oil and gas resources last?

The length of time that oil and gas resources last in any given country largely depends on the amount of discovered resources and the rate at which these resources are produced. This rate is determined by many factors, including technical, strategic and economic reasons. In Uganda, at a projected peak production rate of about 200,000 barrels of oil per day, it is estimated that the current discovered resources can last 20-30 years. However, additional exploration and

appraisal is expected to be undertaken in the country, and this could lead to additional resources being discovered in the country, hence prolonging this production period. It is important that these resources are produced gradually in an efficient manner and at an economic rate that will also provide a sustained benefit to the country.

11. How far in the ground does the petroleum lie?

The depth at which hydrocarbon deposits are found varies greatly around the world. Very shallow deposits of less than 30metres were found in the early days of exploration. Today, it is common to produce oil from more than 3,000 metres. In Uganda, petroleum has been encountered between 290 metres and 3,000metres in the discoveries that have been made in the Albertine Graben to date.

12. What is the quality of Uganda's crude oil?

Different types of crude oil are produced around the world. Two of the most important quality characteristics of oil are its density and sulphur content. Density ranges from light to heavy, while sulphur content is characterized as sweet or sour. Crude oils that are light (with degrees of API gravity above 36⁰) and sweet (low sulphur content) are usually priced higher than heavy, sour crude oils. Uganda's crude oil has; API range of 21⁰ ~ 37⁰, with a low sulphur content but is waxy with an average pour point of 40⁰C and hence solidifies at room temperature. Uganda's crude oil is therefore described as sweet and medium to heavy.



13. What happens after a petroleum discovery has been made?

In accordance with section 66 of the PEDP Act 2013, when a discovery is made, the licensee is required to notify the Government and submit a technical evaluation. The licensed Oil Company appraises the discovery to determine the extent of the discovery and the characteristics of the crude oil therein by drilling additional wells (figure 5) and/or undertaking well testing. Following completion of appraisal and interpretation of the data acquired during appraisal, the company applies for a production licence and this application is supported by a Field Development Plan (FDP)



Figure 5: Buliisa District leaders visiting appraisal drilling operations in EA 2

which details how the company intends to produce and transport the petroleum in the discovery; and a Petroleum Reservoir Report (PRR) that describes the technical understanding of the reservoir below the surface. These reports are reviewed by Government and discussed with the company until agreement is reached and a production license is issued. The company then prepares the field for production by drilling injection and production wells and also putting in place other surface facilities for production and processing of crude oil.

14. What is the plan for commercialising the discovered oil and gas resources?

The National Oil and Gas Policy, 2008 recommends value addition through refining. A Memorandum of Understanding (MoU) between Government and the Licensed Oil Companies which provides for a commercialization plan for the development of the discovered oil and gas resources in the country was concluded during February 2014. The MoU provides for the use of petroleum for power generation, supply of Crude Oil to the refinery to be developed in Uganda and export of Crude Oil through an export pipeline or any other viable options.

15. Has commercial production of oil and/or gas started?

Commercial production can only commence following the issuance of a production license, which authorises the holder to produce petroleum from a field whose appraisal has been completed and development plan approved. Commercial production of petroleum also requires putting in place infrastructure such as processing plants to separate the crude from impurities like sand and water, pipelines for transportation of crude from the fields, a refinery to transform the crude into the various products such as Diesel, Petrol, and Kerosene and facilities for the export of crude oil. These and other infrastructure such as the road networks, water and electricity in the Albertine Graben are being upgraded to support these developments. Full scale production has been earmarked for 2017/2018, after the necessary infrastructure has been put in place.

16. How much gas has been discovered in Uganda to date?

Natural gas can be "associated gas" (found within oil), or "non-associated/ free gas" (independent natural gas reservoir). Associated gas cannot exist without oil in the reservoir which doesn't necessarily apply to free gas reservoirs. The associated gas established in the country to date is estimated at 170 billion cubic feet (bcf) while non-associated gas is estimated at 500bcf. This figure, together with that of non-associated gas will be better defined upon completion of appraisal.



17. How can the gas resources be utilised?

The gas resources are commercially viable and can be used for power generation. In addition, natural gas can be used for domestic purposes such as heating and cooking. It can also be used as fuel for vehicles, the production of iron and steel from iron ore, in fertilizer plants and as a chemical feedstock in the manufacture of plastics and other commercially important organic chemicals. Natural gas can also be re-injected into the reservoirs to maintain pressure to support production of crude oil through enhancement of oil recovery. Alternatively, after processing, gas can be used for on-site electricity generation or used as feedstock for different petrochemical industries. Another possibility is to export natural gas as a liquid. Gas-to-liquids (GTL) is a developing technology that converts natural gas into synthetic gasoline, diesel, or jet fuel.

REFINERY DEVELOPMENT

18. Why is Uganda opting for development of a refinery?

Objective 4 of the National Oil and Gas Policy (2008) for Uganda is to promote valuable utilisation of the country's oil and gas resources through in-country refining of crude oil. In this regard therefore, Government undertook a feasibility study on in-country refining in 2010 and the study recommended that development of a refinery in Uganda was the most economic option for the utilisation of Uganda's crude oil. The refinery will also ensure security of supply of petroleum products to Uganda. In addition the refinery will create jobs for Ugandans, promote industrialisation while saving foreign exchange which would have been used to import petroleum products.



Figure 6: Part of a refinery complex

19. Where will the refinery be located?

The feasibility study recommended Kabaale Parish in Buseruka Sub County, Hoima district as the most suitable location for the refinery. This is due to its centrality in relation to the entire Albertine Graben, proximity to the oil fields, sparse population and relatively flat terrain among others.

20. What is the planned size and configuration of the refinery to be developed?

A refinery with an input capacity of 60,000 barrels per day, starting with a capacity of 30,000 barrels per day will be developed. The refinery configuration and complexity determines which products can be produced from the crude oil. The planned refinery is expected to produce Liquefied Petroleum Gas (LPG), diesel, petrol, kerosene, jet fuel and Heavy Fuel Oil (HFO).

21. How will the refinery project be financed?

Government has invited private sector participation in the development of the refinery. The refinery will be developed on a Public-Private partnership (PPP) with shares of 40: 60 respectively. The private share of 60% aims at attracting investors with experience and capital to participate in developing the refinery. Government has also invited East African member states to participate in the development of the refinery by taking part of the 40% public shares.

22. What will be the effect of the development of the refinery on community settlements, will some people be displaced?

The Ministry is in the process of acquiring 29 sq.km of land for the refinery. This land will host a refinery complex, an aerodrome, waste management facilities and petrochemical industries among others.

As part of this process, Government undertook a Resettlement Action Plan (RAP) through a consultative process with the Project Affected Persons (PAPs) (figure 7) for the required land during 2012. The objective of the RAP was to develop a framework for managing the loss of economic activities and livelihoods through compensation and/ or relocation of the affected people. Following approval of the RAP, its implementation commenced in July 2013 with disclosure of compensation values to verified land, crop and property owners and training in financial management and livelihood improvement to enable the PAPs put to good



Figure 7: Community Sensitisation Meeting during acquisition of land for the refinery

use the compensation packages. Payment of compensation packages commenced in December 2013 and resettlement areas/land has been identified for those that opted for resettlement. As this process is ongoing, sensitisation and engagements with the PAPs continues to ensure a smooth exercise. The entire resettlement process is being undertaken in line with the existing national laws and international standards/guidelines.

GOVERNMENT POLICY

23. What are the Policy and Regulatory frameworks governing the country's petroleum sector?

A National Oil and Gas Policy for Uganda was approved by Cabinet in 2008. As part of efforts to operationalize the Policy, new legislation for the oil and gas sector in Uganda has been developed. The Petroleum Exploration, Development and Production (PEDP) Act 2013; and the Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act 2013 became effective in April 2013 and July 2013 respectively. The former repealed the Petroleum Exploration and Production Act of 1985. In addition, the sector is guided by the Petroleum, Exploration and Production regulations of 1993 which are being updated together with other sectoral laws, statutes and guidelines on Environment, Wildlife, Water, Income Tax, Land, among others

24. What is the Institutional Frame work for the Sector?

The National Oil and Gas Policy highlights the roles of the different Government institutions led by the Ministry of Energy and Mineral Development. The Ministry gives policy guidance and monitors the work of the oil and gas agencies placed under it, namely; Petroleum Authority of Uganda and National Oil Company. The policy recommends the setting up of the three separate institutions with the following roles:-

- The Ministry assisted by a Directorate of Petroleum responsible for policy making; coordinating the development of the sector; and undertake licensing and national and capacity building among other roles
- The Petroleum Authority of Uganda will be created to regulate the different players in the sector, including enforcing compliance and monitoring the operations of oil companies.
- A National Oil Company as a separate commercial entity will be responsible for state participation in the licences and other related business aspects.

The detailed roles of the Petroleum Authority and National Oil Company are provided in the PEDP Act 2013 and their formation is ongoing.

25. How can the National Oil and Gas Policy and the Laws be accessed?

Hard copies of the National Oil and Gas Policy for Uganda and the laws and regulations can be accessed from the Ministry of Energy and Mineral Development, and soft copies from both MEMD and PEPD's websites www.energyandminerals.go.ug and www.petroleum.go.ug respectively. As part of the implementation of the National Communication Strategy for the Oil and Gas Sector in Uganda, government has developed a popular/ simplified version of the policy which has been translated into eleven local languages, which can also be accessed as highlighted above.

26. What efforts are in place to keep Local Communities informed and enable their participation in the sector?

The National Communication Strategy for the oil and gas sector in Uganda identifies communities in the Albertine Graben as one of the key audiences for oil and gas information since they host oil and gas operations and infrastructure for the developments. Information dissemination to communities is undertaken through Community consultations and sensitisation meetings before and during operations. Radio talk shows are carried out periodically to relay information to communities in areas of operation and across the country on topics of common interest.

In addition, the Community Development Officers based at the district and community levels are being capacity built to also support the dissemination of information on the oil and gas sector to the communities. Local communities supply most of the unskilled labour required during implementation of oil and gas activities in their areas. The Oil Companies undertake Corporate Social Responsibility (CSR) initiatives to support service delivery in health (figure 8), education and enterprise development, among others in the communities where oil and gas activities are undertaken. The Ministry plans to set up regional offices to ensure easy accessibility for the communities.



Figure 8: Buliisa Health Centre IV constructed by Tullow Oil as part of CSR initiatives

27. How and when will licensing of new acreage for exploration be undertaken?

The NOGP provides for efficiency in licensing through competitive bidding. The Petroleum (Exploration, Development and Production) Act, 2013 provides for licensing of areas with the potential for petroleum production in the country to be undertaken through open, transparent and competitive bidding. Less than 20% of the Albertine Graben is licensed as shown in figure 9. Preparation for a competitive licensing round for some of the areas with good data coverage which are currently not licensed in the Albertine Graben has commenced and is planned for 2015. In addition, the Ministry of Energy and Mineral Development is preparing to undertake speculative geophysical surveys in the other areas of the country which have potential for petroleum production but with little or no data coverage yet. Licensing for these areas with little or no data is expected to be undertaken subsequently.

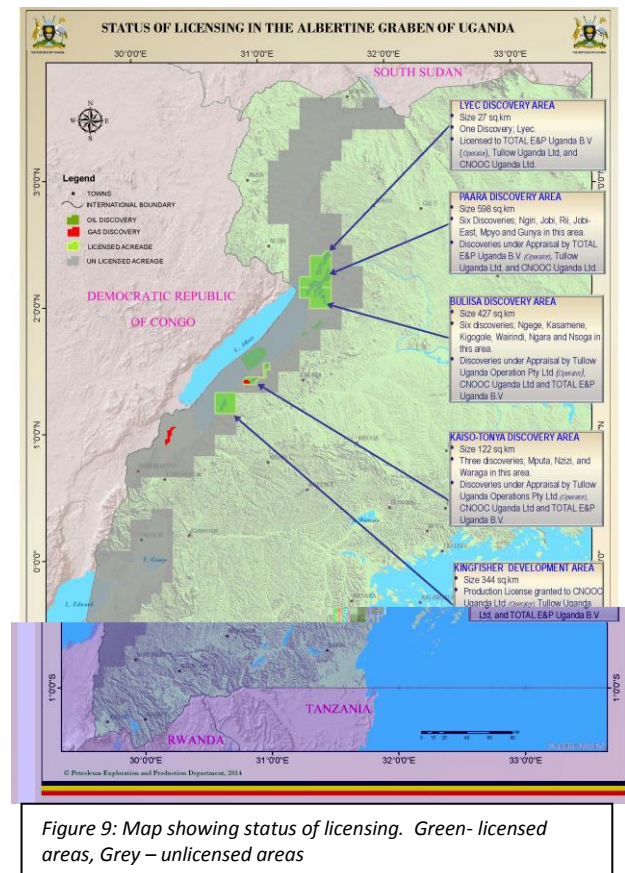


Figure 9: Map showing status of licensing. Green- licensed areas, Grey – unlicensed areas

28. The Albertine Graben is shared with Democratic Republic of Congo (DRC); what strategies are in place to ensure harmonised development?

The Governments of Uganda and DRC (then Zaire) signed an agreement of cooperation in 1990, to allow for joint exploration and exploitation of resources across the border by either country. An addendum to the agreement was signed in 2007 to provide for how any fields falling across the border would be shared in line with the principle of unitization. This agreement allows establishment of the percentage of the field in each country and thereby determine each country's share at the time of production. The two Governments have held discussions on the ongoing work in the Albertine Graben, exchange of technical data and visits to the Albertine Graben to understand the exploration work, among others. It is however important to note that the discoveries made in Uganda to date are not on the common border with DRC. The Governments of the two countries continue to have regular dialogue to ensure harmonious development of the resources on either side of the border.

PETROLEUM REVENUE MANAGEMENT

29. What revenues should Government expect from the discovered petroleum resources?

Government revenues from oil and gas include royalties, profit oil share, state participation and taxes. These revenues are expected to increase over the years as the company's recoverable costs reduce.

The Production Sharing Agreements (PSAs) signed between Governments and the Oil companies provide for the sharing of petroleum during production. The International Oil Company (IOC) invests capital (along with the National Oil Company (NOC) in some cases. Capital expenditures and operating costs are deducted from production in the form of cost oil. The share of the produced oil less cost oil is **profit oil**, which is shared between Government and the licensee in accordance with the PSA. Government also receives other payments such as **bonuses, royalties, duties, or taxes** which are calculated on the basis of the amount of oil produced; Government and the IOC will share profit oil throughout the entire duration of production. Government also receives corporate tax on the IOC's profit oil.

30. How does Government determine the recoverable costs?

The PSAs have a provision for recoverable costs and set out the criterion under which these costs are determined basing on the work programmes and budgets undertaken by the oil companies. These work programmes and budgets are presented to the Advisory Committee comprised of representatives of Government and the Oil Companies for consideration and approval. All budgets submitted by the oil companies are approved at this stage. The Auditor General audits the annual books of account of the oil companies to ascertain the recoverability of all expenditures from the approved activities.

31. Who monitors the operations of the oil companies?

The Ministry of Energy and Mineral Development has on-site field monitors during all company operations to among other things ensure that the executed work programmes and budgets are in-line with those approved and follow-up to ensure that work is undertaken in line with the provisions of the Laws, PSAs and Regulations. The Companies submit daily reports regarding operations, including the costs for these operations. Other institutions such as NEMA and UWA also have field based monitors who work with the District Environment Officers to monitor the Environmental and biodiversity aspects.

32. How will Petroleum revenues be absorbed into the economy?

The goal of the National Oil and Gas Policy is to use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society.

An Oil and Gas Revenue Management Policy was put in place in 2012, and this policy emphasises the need for Petroleum revenues to be used to develop infrastructure (figure 10) enhance the other productive sectors of the economy such as agriculture, tourism, manufacturing, education, among others. Creation of lasting benefits includes the use of these resources to develop durable and competitive competencies through education, infrastructure development, together with financial and social capital which are useful beyond the life of the oil and gas sector.



Figure 10: A completed section of the 92km Hoima-Buseruka-Kaiso Tonya road which is due to be completed during 2015.

LAND USE AND COMPENSATION

33. How are Compensation rates for disturbance during oil and gas operations determined?

Compensation rates for crops, trees and other structural items not of a permanent nature are determined by the district land board and forwarded to the Chief Government Valuer in the Ministry of Lands for approval. These rates are reviewed on a regular basis and need to be fair to all concerned parties and in line with prevailing market prices.

Land is valued based on the market value as provided for in Section 77 of the Land Act Cap.227. This is also in line with international valuation practices.

The market value of land is determined by many factors, including location, accessibility, social amenities, and availability of business opportunities, among others. The value is assessed by professional valuers after conducting a survey to establish the prevailing market price for land in a given locality using a comparative method. These rates are verified and approved by the Chief Government Valuer.

34. What is Government doing to ensure organised development and land use in the Albertine Graben?

The Albertine Graben was declared a special planning area during 2010 and emphasis has been put on physical planning of Municipalities and other towns in the region. Draft plans for Buliisa town council together (figure 11) with, Sebugoro in Hoima district and Butiaba in Buliisa district have been prepared and are under review. The Ministry of Lands, Housing and Urban Development (MLHUD) is also preparing physical development plans for the area around the refinery in Buseruka Subcounty, Hoima District. In addition, MLHUD has commenced developing a Landuse plan for the entire Albertine Graben.

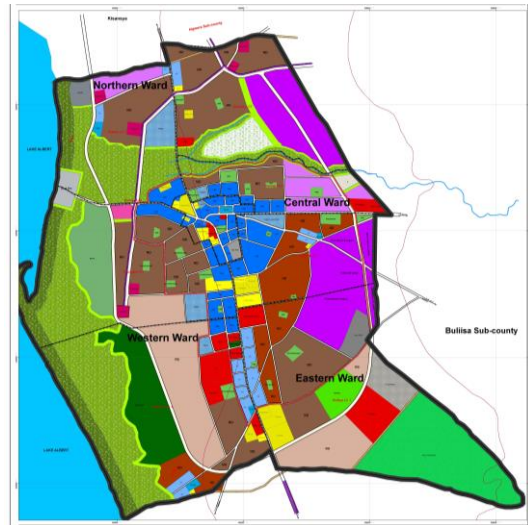


Figure 11: Draft Buliisa Urban Physical Development Plan (2014-2024)

ENVIRONMENT MANAGEMENT

35. How are environmental concerns related to oil exploration activities being handled?

Frameworks to ensure harmonious existence between the environment and oil and gas operations are in place and are being implemented. These include:

- Environment and Social Impact Assessments (ESIAs) which are undertaken in consultation with Government through National Environment Management Authority (NEMA) and the local communities. This ensures that any potential impacts – positive or negative – are considered and mitigation measures are put in place.
- A multi-institutional monitoring team from NEMA, PEPD, Uganda Wildlife Authority (UWA), National Forestry Authority (NFA), Directorate of Water Resources Management (DWRM), and Directorate of Fisheries Resources (DFR) together with the respective District Environment Officers continually monitor the activities.
- Other frameworks developed to date include an Environmental Sensitivity Atlas for the AG, an Environment Monitoring Plan, and an Enforcement Strategy together with Guidelines for Waste management and Operations in protected areas. A Strategic Environment Assessment for oil and gas activities has also been developed to ensure that environmental concerns are included in all Government Plans, Programmes & Policies.

36. Are the Environment and Social Impact Assessment (ESIA) reports public documents and can the comments from stakeholders be reviewed?

ESIAs are indeed public documents, and a copy of the final ESIA report is forwarded to the district through the District Environment Officer (DEO). It includes all comments and concerns raised and the responses given during consultations with stakeholders.

37. How is the waste generated from the drilling operations managed?

Waste produced from drilling operations is mainly composed of mud cuttings which are a mixture of rock cuttings and drilling fluid that contains additives like bentonite, barite which are used in the drilling process. In Uganda, Water Based Mud (WBM) has been used most often because it is more environmentally friendly than Oil Based Mud (OBM).

In the interim, waste generated from the well sites is stored at designated consolidation sites. There are four waste consolidation sites; Ngara and Bugungu for wells drilled in Buliisa district, Tangi in Nwoya district for wells drilled North of the Albert Nile and Kisinja for wells drilled in Kaiso-Tonya, Hoima district (figure 12). The sites have specially designed pits in which the solid and liquid wastes are stored separately. The pits are 4 metres deep and double-lined with strong PVC (10mm thick) and concrete which is tested before being put to use to avoid any seepage into the environment. Monitoring water boreholes are drilled around the perimeter of the each of the pits to monitor any contamination.



Figure 12; A Waste Consolidation Site in Kaiso Tonya, Hoima District.

NEMA issued guidelines on drilling waste disposal and the licensed oil companies are in the final stages of procuring waste handling service providers to dispose off the generated waste. The practice of consolidation prevents a situation where the waste is spread out in different locations, which would make it more challenging to manage. Worldwide the different disposal methods include land farming, landfills, brick making, road construction, among others after the waste has been treated and stabilised.

NATIONAL PARTICIPATION

38. How can one get a job in the oil and gas sector?

There are both technical and non-technical employment opportunities in the oil and gas sector (figure 13). These include opportunities for qualified Geoscientists, Engineers, Economists, Accountants, Social Work, among others. These opportunities are advertised in the media and

are competitive. The unskilled jobs in the exploration areas are offered based on recommendations made by the community leaders in the areas where the operations take place. The oil and gas sector, is however, not a mass employer but offers more opportunities in service provision and spill over benefits through other sectors such as clearing and forwarding, ICT, hospitality, manufacturing, transportation, construction which are also growing.



Figure 13: Ministry staff with Ugandan employees during a drilling activity in EA 1

39. How is the business sector benefiting from developments in the oil and gas industry?

Oil companies use local contractors in areas such as construction, civil works, ICT, Camp Management, Clearing & Forwarding, Heavy Lifting, road works, and supply of food stuffs, among others. The licensed companies undertook an industrial Baseline survey (IBS) to assess the manpower and industry supply and demand for their projects in order to develop appropriate intervention strategies. The findings of the survey were presented to stakeholders and implementation of key recommendations has commenced. This information can be accessed at the company's national and district offices. Other sectors like construction, banking, fabrication, agriculture will continue to grow and provide employment opportunities.

40. What is the strategy to sensitize local entrepreneurs to get involved and benefit from the sector?

A National Content study to establish the opportunities and challenges for the participation of Ugandans in the oil and gas sector was commissioned in 2010. The study was completed during 2011 and the final report can be accessed at www.petroleum.go.ug .

The key recommendations of the study include; establishment of an institutional framework for the implementation of national content policies for the oil and gas sector, ensuring capacity

building for people and firms (enterprise development), and facilitating national participation of Ugandans in the sector with due regard to maintaining the competitiveness of the sector. The recommendations of this study are now being implemented and the activities undertaken to date include putting in place a National Content Office in the Ministry of Energy and Mineral Development, setting up an association of oil and gas service providers in the country and formulation of a National Content Policy and Plan. The Policy and Plan are expected to be in place before the end of 2014.

CAPACITY BUILDING

41. How is Government ensuring that Ugandans attain the required qualifications to participate in the sector?

The Uganda petroleum Institute at Kigumba was started by Government during 2009 to offer technical training to Ugandans on petroleum related disciplines. In addition Makerere University commenced a BSc degree in Petroleum Geoscience in 2010 and an Msc in Petroleum Geoscience during 2012 (figure 14). Government will continue to work with other universities and institutions across the country to support the development of petroleum training in the country.

As these initial capacity building efforts are being taken forward, MEMD is working with the World Bank to undertake a comprehensive study on the skills requirement for the entire petroleum value chain in the country. This study will document the skills required for exploration, development, production, refining and transportation at the artisan, technical and professional levels of education.



Figure 14: Makerere University Students studying sedimentary rocks in Kaiso Tonya during a geological mapping field study visit.

Government has continued to prioritise capacity building of Officers from different institutions taking forward the development of the Oil and Gas Sector in the Country, including; Ministries of Finance Planning and Economic Development, Justice and Constitutional Affairs, Lands, Housing and Urban Development, Energy and Mineral Development, Water and Environment,

NEMA, Uganda Wildlife Authority, Uganda Revenue Authority, Office of the Auditor General and Bank of Uganda among others. To date over 100 officers have been trained at post graduate level specializing in different petroleum disciplines. In addition, specialised short term training programs are also undertaken.

42. What qualifications are required to join the Uganda Petroleum Institute in Kigumba and is there guarantee for jobs?

UPIK admits students that have attained their 'A' Level Certificate and have passed Chemistry, Physics and Math at both 'O' and 'A' Levels. The applicants should have completed their A' level within the past two years. The diploma course takes 2 years to complete and 6 months of industrial training for certification. Admission to UPIK is now undertaken by the Joint Admissions Board in the Ministry of Education and Sports (MoES). Regarding employment opportunities, the oil and gas sector is progressing towards the development phase and construction of the refinery where 65% of the required labour force (100,000 to 150,000 indirect and induced jobs) will be artisans and technicians with industry certified skills.

Visit www.petroleum.go.ug for more information on Uganda's Oil and Gas Sector.