



THE REPUBLIC OF UGANDA

***MINISTRY OF ENERGY AND MINERAL
DEVELOPMENT***

ANNUAL REPORT 2016

Mandate: "To establish, promote the development, strategically manage and safeguard the rational and sustainable exploitation and utilisation of energy and mineral resources for social and economic development".

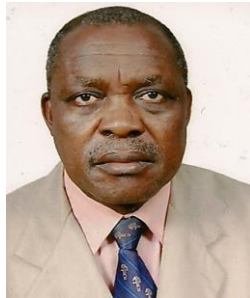
FOREWORD



Hon. Eng. Irene Muloni, MP
Minister of Energy & Mineral Development



Hon. Simon D'Ujanga
Minister of State for Energy



Hon. Peter Lokeris, MP
Minister of State for
Mineral Development

Fig. 1: The Political Leadership of the Ministry

I wish to extend my gratitude to all Ugandans upon the conclusion of the year, 2015. I also pass my sympathies to all those who encountered various problems during the year and pray that the Almighty God comforts you. My Ministry is responsible for the management and development of the Energy and Mineral sector in Uganda through coordinated national policy formulation, implementation and monitoring. I am happy to extend my heartfelt congratulations to my colleagues, the ministers of state, the top management, staff and all our stakeholders who have continuously participated in the process of developing this sector.

The NRM manifesto, under the visionary leadership of H.E. Yoweri Kaguta Museveni consolidated achievements in the year 2015 within the Energy and Mineral sector.

My message to the readers is to encourage you support MEMD in the endeavour to “Establish, Promote the Development, Strategically Manage and Safeguard the Rational and Sustainable Exploitation and Utilisation of Energy and Mineral Resources for Social, and Economic Development”.

I look forward to a year of prosperity and peace in Uganda as we consolidate the achievements ushered in by the NRM Government to upscale the work we are undertaking in Uganda.

I wish all readers the best and a joyous year, 2016.

For God and My Country



Eng. Irene Muloni, MP.

MINISTER OF ENERGY AND MINERAL DEVELOPMENT

LIST OF ABBREVIATIONS (Acronyms)

AAPG	American Association of Petroleum Geologists
AAS	Atomic Absorption Spectrophotometer
ACGE	African Center of Geothermal Excellence
ACMs	Advisory Committee Meetings
ACODE	Advocates Coalition for Development and Environment
AEC	Atomic Energy Council
AfDB	African Development Bank
AGID	African Geothermal Inventory Database
AGAU	Agro-Geology Association of Uganda
AIA	Appropriation in Aid
AFQ	Application for Qualification
AR	Annual Report
ASMs	Artisanal and Small Scale Miners
BFP	Budget Framework Paper
BGR	Geological Surveys of Germany
BOOT	Build Own Operate and Transfer
BoPD	Barrels of Oil Per Day
BoQs	Bill of Quantities
CAO	Chief Administrative Officer
CCT	Correlated Color Temperature
CDAP	Community Development Action Plan
CGGC	China Gezhouba Group Company Limited
CNOOC	China National Offshore Oil Corporation
CPF	Central Processing Facility
CPP	Crude to Power Project
CREEC	Center for Research in Energy and Energy Conservation
CRI	Color Rendering Index
CSCO	Civil Society Coalition on Oil
CTCN	Climate Technology Centre Network
CWE	China Water International and Electric Corporation
DM	Department of Mines
DRUSSA	Development Research Uptake in Sub-Saharan Africa
EA	Exploration Area
EAC	East African Community
EACREEE	East African Centre for Renewable Energy and Energy Efficiency
EAPCE	East African Petroleum Conference and Exhibition
EECD	Energy Efficiency and Conservation Department
EEP	Energy and Environment Partnership
EIB	European Investment Bank
EL	Exploration License

EPC	Engineering, Procurement and Construction
EPD	Electronic Personal Dosimeter
EPRC	Economic Policy Research Centre
EPS	Early Production Scheme
ERA	Electricity Regulatory Authority
ESDP	Electricity Sector Development Project
ESIA	Environmental and Social Impact Assessment
ESPs	Energy Service Providers
EU	European Union
E&M	Electrical & Mechanical equipment
FATs	Factory Acceptance Tests
FDPs	Field Development Plans
FEUL	Frontier Exploration Uganda Limited
F&A	Finance and Administration
G&G	Geological and Geophysical
GDC	Geothermal Development Company
GEA	Geothermal Energy Association
GGA	Global Geothermal Alliance
GGCS	Geography, Geo-Informatics and Climatic Sciences
GIC	GeoInformation Communication Centre
GIIP	Gas Initially In Place
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GmbH)
GoU	Government of Uganda
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GRD	Geothermal Resources Department
GRMF	Geothermal Risk Mitigation Fund
GSMD	Geological Surveys and Mines Directorate
GVEP	Global Village Energy Partnership
HFO	Heavy Fuel Oil
HM	Hydro Mechanical
HMC	Heavy Mineral Concentrate
HPP	Hydro Power Plant
HR	Human Resources
HSE	Health Safety and Environment
IAEA	International Atomic Energy Agency
IAEE	International Association of Energy Economics
IAIA	International Association of Impact Assessment
ICEIDA	Icelandic International Development Agency
ICGLR	International Conference of the Great Lakes Region
ICT	Information and Communication Technology
IIRS	Indian Institute of Remote sensing
IISD	International Institute for Sustainable Development

IMC	Inter-Ministerial Committee
IPP	Independent Power Producers
ISMP	Iron, Steel and Metal Processing
ISO	International Standards Organisation
ITO	Information Technology Officer
JICA	Japan International Cooperation Agency
JOGMEC	Japan Oil and Gas Metal Corporation
JSR	Joint Sector Review
JST	Jinja Storage Tanks
K	Potassium
KAPSARC	King Abdullah Petroleum Studies and Research Center
KFDA	Kingfisher Development Area
KV	Kilo Volts
LG	Local Government
LL	Location License
LMSCE	Line Ministries Self Coordinating Entity
LVMM	Low-value minerals and materials
MCRS	Mining Cadastre and Registry System
MDL	Mineral Dealers License
MEMD	Ministry of Energy and Mineral Development
MEPS	Minimum Energy Performance Standards
ML	Mining Lease
MoFPED	Ministry of Finance, Planning and Economic Development
MoU	Memorandum of Understanding
MPS	Ministerial Policy Statement
MPS	Model Production Sharing Agreement
MT	Medium Term
MT	MagnetoTelurics
MTAC	Management Training and Advisory Center
MTC	Main transformer cavern
MUZARDI	Mukono Zonal Agricultural Research and Development Institute
MW	Mega Watts
MWAMID	Mineral Wealth and Mineral Infrastructure Development
MYJ	Maendeleo ya Jamii
NARL	National Agricultural Research Laboratory
NBEST	National Biomass Energy Strategy
NCIP	Northern Corridor Integration Projects
NDE	National Designated Entity
NDP	National Development Plan
NEMA	National Environmental Management Authority
NEU	Nuclear Energy Unit
NOCK	National Oil Corporation of Kenya
NTR	Non Tax Revenue

OAG	Office of the Auditor General
ODA	Official Development Assistance
OMCs	Oil Marketing Companies
OPM	Office of the Prime Minister
PAPs	Project Affected Persons
PAU	Petroleum Authority of Uganda
PDAC	Prospectors and Developers Association of Canada
PDEs	Procurement and Disposal Entities
PEDPD	Petroleum Exploration, Development and Production Department
PF	Power Factor
PhD	Doctorate of Philosophy
PL	Prospecting License
PLAs	Production Licence Applications
POL	Petroleum Operations License
PPA	Power Purchase Agreement
PPDA	Public Procurement and Disposal of Public Assets Authority
PPE	Personnel Protective Equipment
PPP	Public Private Partnership
PREEEP	Promotion of Renewable Energy and Energy Efficiency Programme
PRPD	Peace, Recovery and Development Plan
PRRs	Petroleum Reservoir Reports
PSD	Petroleum Supply Department
PSFU	Private Sector Foundation Uganda
PSIA	Poverty and Social Impact Assessment
PSIC	Power Sector Information Center
PSIP	Power Sector Investment Plan
RAB	Rottary Air Blast
RAIS	Regulatory Authority Information System
RAP	Resettlement Action Plan
RAS	Rapid Asset Survey
RFP	Request for Qualification
RICE	Rural Initiatives for Community Empowerment
RoW	Right of Way
SDG	Sustainable Development Goal
SE4ALL	Sustainable Energy for All
SPE	Society of Petroleum Engineers
SREP	Scaling up Renewable Energy Programme
SSPVTC	St. Simon Peter's Vocational Training Centre
STOIIP	Stock Tank Oil In Place
SWG	Sector Working Group
TA	Technical Assistance
TC	Technical Committee
TCMs	Technical Committee Meetings

TD	Target Depth
Th	Thorium
THMCOL	Tibet Hima Mining Company Limited
TLDs	Thermo Luminescent Dosimeters
TORs	Terms Of Reference
TPC	Technical Petroleum Committee
TPH	Tons Per Hour
TTG	Tonalites Tourmaline Gneiss
U	Uranium
UAE	United Arab Emirates
UDBP	Uganda Domestic Biogas Programme
UDIS	Unpublished Document Information System
UETCL	Uganda Electricity Transmission Company Limited
UK	United Kingdom
UMA	Uganda Manufacturers' Association
UMI	Uganda Management Institute
UN	United Nations
UNACC	Uganda National Alliance on Clean Cooking
UNBS	Uganda National Bureau Standards
UNCDF	United Nations Capital Development Fund
UNCST	Uganda National Council of Science and Technology
UNEP-ARGeo	United Nations Environment Programme – African Rift Geothermal Energy Facility
UNOC	Uganda National Oil Company
UPS	Un-interrupted Power System
URSB	Uganda Registration Services Bureau
USA	United States of America
WSDSP	Workforce Skills Development Strategy & Plan
XRF	X-Ray Fluoresces Instrument

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EXECUTIVE SUMMARY



Dr. F.A. Kabagambe-Kaliisa
Permanent Secretary



Eng. Paul Mubiru
Accounting Officer

Fig. 2: Top Executives of the Ministry

The mandate of the Ministry of Energy and Mineral Development is to “***Establish, Promote the Development, Strategically Manage and Safeguard the Rational and Sustainable Exploitation and Utilization of Energy and Mineral Resources for Social, and Economic Development***”.

The medium term key priorities that the Ministry continues to implement are: -

- i) increasing electricity generation capacity and transmission network;
- ii) increasing access to modern energy services through rural electrification and renewable energy development;
- iii) promoting and monitoring petroleum exploration and development in order to achieve national production;
- iv) developing petroleum refining and pipeline transportation infrastructure.
- v) streamline petroleum supply and distribution; and
- vi) promoting and regulating mineral exploration, development, production and value addition.
- vii) Inspecting and regulating exploration & mining operations.

Other priorities include:

- i) promotion of efficient utilisation of energy;
- ii) monitoring geotectonic disturbances and radioactive emissions.

PROGRESS IN INCREASING ELECTRICITY GENERATION CAPACITY

Development of the Karuma Hydropower Project (600MW): Works at the project site progressed well and significant milestones were reached during the reporting period which include completion of excavation of underground tunnels i.e. Main Access Tunnel, Escape and Ventilation Tunnel, Tail Race Tunnel, SAVT, ATAP, MTET, ADIT 3, 9, 10 and first bench of the Power house cavern as well as the first bench of the main transformer cavern (MTC).

Development of the Isimba Hydropower Project (183MW): Implementation of the Resettlement Action Plan (compensation) for both the dam area and the transmission line is on-going. By end of December 2015, 95% of the PAPs affected by the Power Plant and 85% affected by the transmission line had been paid. The delays in conclusion of the RAP implementation process is mainly due to refusal of the valuation from the CGV by some PAPs and such cases are before the courts of law. Delay was also due to conflict of ownership between claimants. The project is still on schedule to be completed by the end of 2017.

Development of the Ayago Hydropower Project: The feasibility study for the project was reviewed by the consultant, WAPCOS and recommended for adjustment of the installed capacity for Ayago HPP from 600MW to 840MW. The Ministry of Energy and Mineral Development had planned to achieve financial closure for Ayago HPP and commencement of construction works by the end of 2015. Financial closure wasn't attained due to the fact that government was soliciting funds from the same financier (China EXIM bank).

Renewable Energy Projects: M/S Hydromax was procured as the private partner to develop the Nyagak III (4.4MW) HPP. The RAP implementation process is still ongoing and implementation of the 44.7MW Muzizi hydropower project commenced in April 2015. The implementing consultant's contract was signed in August 2015. RAP implementation is still ongoing. The Achwa hydropower project (83MW) is being developed by a consortium of PAC SPA and Berkerly Energy. The feasibility study for the associated transmission line, financed by Government of Uganda was completed in June 2015. The firm licensed to develop the site is finalizing negotiations of the Power Purchase Agreement (PPA) with Uganda Electricity Transmission Company Limited (UETCL) and is also negotiating an Implementation Agreement with the Ministry of Energy and Mineral Development. The European Investment Bank (EIB) is interested in funding the project and a request was sent to Ministry of Finance, Planning and Economic Development (MoFPED) to formally submit the project to EIB for financing.

Energy efficiency Programmes: Alongside the energy efficiency standards, the comparative energy labels were developed. The standards contain parameters related to energy consumption which the appliances imported into Uganda must conform to, a summary of which is printed on the energy label for consumers' information.

PROGRESS IN INCREASING GRID TRANSMISSION AND ACCESS TO MODERN ENERGY SERVICES

Grid Expansion Programmes – Transmission infrastructure

A number of transmission projects were ongoing by the end of the reporting period. Key among the projects was the Kawanda-Masaka Transmission line. The contractor for the 220kV Kawanda-Masaka transmission line is M/S KEC International from India. Works are ongoing and all designs and factory acceptance tests (FATs) have been completed. 30% of works at site have been completed-46 towers have already been erected against a total of 372. Soil investigations, excavations, and foundation castings are ongoing for the remaining towers. Overall the project progress was reported at 55% against 60% of project period that has elapsed. The major challenge facing the project is the outstanding Right of Way (ROW) issues for the project to be

delivered in time. Other projects are at different stages of development and are highlighted in this report.

Rural Electrification

Government continued to expand the rural electrification coverage across the country. To date, 108 out of 112 district Headquarters of Uganda have been connected to the grid. The remaining four (04) are Kotido, Kabong, Nwoya and Buvuma. The rural electrification rate is now at 7% and hope to expand with additional resources for the ongoing projects to cover various counties and subcounties. In addition, Government has set a target of the peri-urban electrification component of the Electricity Sector Development Project (ESDP) is to provide 8,000 connections to eligible households within a 5 km radius of the Kawanda-Masaka transmission line corridor. Under this component, household connection works are to be undertaken by UMEME, on a single-source basis.

PROGRESS IN PROMOTION AND MONITORING OF PETROLEUM EXPLORATION, DEVELOPMENT AND PRODUCTION

Regulatory Framework

The working group on drafting of petroleum regulations for the Upstream and Midstream Acts led by the Ministry of Justice and Constitutional Affairs concluded the drafting of Technical, Health, Safety and Environment Protection, Metering and National Content Regulations for the Petroleum sub sector. By end of the calendar year 2015, consultations on the regulations was completed and awaiting the Minister's consideration.

Licensing Status and Investment Promotion

In line with the Petroleum Exploration, Development and Production Act 2013, Cabinet approved the first licensing round for Petroleum Exploration in Uganda during January 2015 and a report presented to Parliament. Subsequently, the first competitive licensing round was announced by the Minister of Energy and Mineral Development on 24th February 2015. This licensing round covers six areas in the Albertine Graben which already have substantial data coverage. The six blocks are: Ngassa (410 Km²) in Hoima District, Taitai & Karuka (565 Km²) in Buliisa District, Ngaji (895 Km²) in Rukungiri & Kanungu Districts, Mvule (344 Km²) in Moyo and Yumbe Districts together with Turaco (425 Km²) and Kanywataba (344 Km²) in Ntoroko District. By the end of 2015, Government had shortlisted sixteen (16) companies to proceed to the next stage of evaluation.

Status of Exploration

The three licensed oil companies, namely; Total E&P Uganda B.V (TEPU) operating Exploration Areas (EA) 1 and 1A, Tullow Uganda Operations Pty (TUOP) operating EA2 and CNOOC Uganda Limited (CUL) operating the Kingfisher Discovery Area (KFDA) continued to undertake the approved work programmes. Following completion of the exploration and appraisal programs for EA 1, EA 2 and the Kingfisher Discovery Area (KFDA), there was a general reduction in field operations during the period under review.

PROGRESS IN DEVELOPING PETROLEUM REFINING AND PIPELINE TRANSPORTATION INFRASTRUCTURE

Commercialization Strategies

Refinery Development: The process of acquiring the 29 square kilometers of land in Kabaale Parish, Buseruka Sub-County, Hoima District for the Refinery and its attendant infrastructure continued during the period under review. Payment of the Project Affected Persons (PAPs) continued throughout the year. The total number of PAPs compensated at the end of the year was 2,460 out of 2,615 Property Owners who opted for cash compensation, which is about 94%. With regard to the Evaluation of the Final Offers for the selection of the Lead Investor for the refinery development that was completed in January 2015, RT Global Resources - led Consortium (Federation of Russia) was selected as the preferred bidder and SK Group - led Consortium (Republic of South Korea) as the alternate. The preferred bidder and GoU started negotiations on the key Agreements for the Refinery Project during the period under review. The First Round of negotiations with the RT-GR led Consortium was held in March 2015. A total of 8 rounds of negotiations were held between the Lead Investor and the Government of Uganda (GoU) during the year 2015. The agreements include; (i) Project Framework Agreement, (ii) Implementation Agreement, and (iii) Shareholders Agreement.

Crude oil transportation to the refinery: Feeder pipelines are to be constructed from the Buliisa Central Processing Facility (CPF) in the North and the Bugoma CPF in the South to a Central hub near the refinery in Kabaale. Stakeholder engagement meetings were held in 29 villages along the 47.87 km pipeline route from the King Fisher Development Area (KFDA) to Kabaale Refinery area. The engagements were aimed at sensitising the communities about the Rapid Asset Survey (RAS) which would be carried out within a 2 km corridor. The King Fisher Development Area (KFDA) feeder pipeline Rapid Asset Survey (RAS) commenced on June 19th 2015 and was completed. Total E&P and Tullow Uganda Operations Pty Ltd procured a consultant to undertake a Resettlement Action study (RAS) for their land requirement including the feeder pipeline from the Central Processing Facility (CPF) in Buliisa. Pre-RAP phase has been done for the facilities.

Pipelines and storage facilities development: The Ministry contracted a Consultant Dr. Benard Kariko Buhwezi of Makerere University on 18th September 2015 to review the Uganda National Strategy and Plan for Transportation and Storage undertaken by Worley Parsons to the required format by Government. This assignment was completed in December 2015. By the end of 2015, a Cabinet Memo was prepared for consideration before implementation commences.

Crude export pipeline: The crude export pipeline is proposed to be developed as part of the Northern Corridor Infrastructure Projects by the EAC (Uganda, Kenya and Rwanda) Partner States. The Partner States contracted Toyota Tsusho Corporation from Japan to carry out a Feasibility Study and Preliminary Engineering Design of the crude oil export pipeline and the study was completed in June 2015. The revised final report was presented to the PSC on 3rd June 2015.

Short Term Commercialisation Plans

Crude oil from extended well testing operation: The process of disposal of the test crude oil commenced in March 2015 but the process was unsuccessful because the bidders failed to demonstrate that they could handle the commodity without causing adverse effects. The Ministry embarked on the process to re-evaluate the disposal process before proceeding to re-tender the test crude oil.

Thermal power plants to utilize crude oil: Among the End of Activity Reports submitted by the licensees and reviewed by PEDPD in this period was the Crude to Power Project (CPP). The report demonstrated that the project was not economically feasible.

PROGRESS IN STREAMLING PETROLEUM SUPPLY AND DISTRIBUTION

Petroleum Products Market: Petroleum pump prices for the calendar year 2015 in Uganda were fairly stable with averages of 3,597; 2,600; and 2706 for PMS, BIK and AGO respectively. The prices fluctuated with in a range of 250, 397 and 465 for petrol, Kerosene and Diesel. International prices for crude oil were at their highest of the year during the months of May and June with US\$ 59.64 and US\$ 59.83 respectively. This was very short lived as they reduced rapidly to 42.05 in August.

Licensing: During the reporting period, the Department continued to streamline the licensing regime under the Petroleum Supply Act 2003 and General Regulations of 2009. In the same period, a total of forty six (46) companies were issued with Petroleum Operating Licenses and sixty one (61) Petroleum Construction Permits were issued. The operating licenses were importation, wholesale and retail for different operators in the country. From the licensing activity (operating licenses and permits), the Department generated Non Tax Revenue of UGX 139,705,308 (One Hundred Thirty Nine Million Seven Hundred Five Thousand and Three Hundred Eight Shillings).

Strategic Fuel Reserves: The department of Petroleum Supply and Distribution continuously monitored stocks movement at the JST facility and collected concession fees. Operational and maintenance activities were also monitored for compliance with industry standards and best practices.

Designs and Bills of Quantities for development of a 40 million litres storage facility at Nakasongola military barracks were produced during the first half of year 2015. Environment Impact Assessment in respect to development of the site was also approved by NEMA. Procurement of Contractors for constructing and commissioning the facility did not commence in the last half of the year due to inadequate financial releases. By December 2015, the Ministry was in discussion with Ministry of Defence for a better alternative of developing and managing the facility.

Eldoret-Kampala-Kigali Oil Pipeline Extension: During the year, the Ministry engaged the consultancy services of M/S Survesis Limited to review and validate the resettlement action plan for Eldoret-Kampala refined products pipeline corridor from Malaba border to a proposed

storage terminal at Buloba. By December 2015, the consultant had submitted an interim report. Once complete this will serve as a guide in compensating the affected persons along the corridor and transferring land ownership rights to the Government of Uganda.

Quality and Standards Monitoring: During the reporting period, the Department continued to implement the Fuel Marking and Quality Monitoring Program. The Fuel Marking and Quality Monitoring Program (FMQP) is a government initiative implemented under a cooperative arrangement between Ministry of Energy and Mineral Development (MEMD) and Uganda National Bureau of Standards (UNBS) in collaboration with Oil Marketing Companies (OMCs). It is guided by the Fuel Marking Regulations 2009 (as amended in 2012).

PROGRESS IN PROMOTING AND REGULATING MINERAL EXPLORATION, DEVELOPMENT, PRODUCTION AND VALUE ADDITION

Mineral Exploration, Development and Production

Mineral Exploration: Geological, Geochemical and Geophysical Surveys and studies were undertaken over the Uranium target located at Ndale Volcanic field in Fortportal District. Geological investigations indicate that the area is overlaid by Tonalites Tourmaline Gneiss (TTG), orthoquartzite, conglomerate, metagabbro, amphibolites, mica schist volcanic tuffs (Ndale Formation) and quaternary sediments. The geophysical study has confirmed that Ndale volcanic field is rich in radioactive minerals with average concentrations of Thorium (Th) – 120ppm, Uranium (U) – 55ppm and Potassium (K) – 1.5%.

Mineral Development: The Directorate undertook regional stream sediment survey of sheet 25/1 (Alerék) in Abim and Agago Districts. Sixty seven (67) stream sediment samples including two duplicates and two (2) rock samples were collected.

The samples were submitted to the mineral dressing laboratory for sample preparation. The stream sediment samples will be dried, demoulded and sieved while the rock samples will be crushed pulverized. The samples will then be sent to the assay laboratory for analysis. The geochemical index map of Uganda is being updated to include the recent geochemical surveys by the Ministry and private companies.

Mineral Production: The value of minerals produced and reported during the calendar year 2015 was UGX 171 Billion. Mineral production this year increased by 1.6% from the previous year's figure of UGX 168 Billion.

Mineral Exports: Revenue worth UGX 5.9 billion was realized from mineral exports of Coltan, tantalite, gold, iron ore, tourmaline, wolfram and tin.

Inspections and Licensing of Mining Activities

Inspection: Inspections of mining activities were carried out to regulate mining operations and maximize the revenue generated from mining operations in the districts of Busia, Bushenyi, Tororo, Isingiro, Kamwenge, Kapchorwa, Kasese, Manafwa, Moroto, Mubende, Namayingo, Ntungamo, and Customs border points in West Nile.

Licensing: The following licenses were granted during the calendar year 2015:- 140 Prospecting Licenses (PL), 136 Exploration Licenses (EL), 19 Location Licenses (LL), 3 Mining Leases and 81 Mineral Dealers' Licenses (MDL). 155 Exploration Licenses, 175 Prospecting Licenses and 22 location licenses expired. By close of the year, a total of 379 licenses had been granted, 44 renewed, 352 had expired and 2 had been revoked.

Geothermal Energy Exploration

The Government of Uganda and the Governments of Kenya and Rwanda signed a memorandum of understanding (MoU) to cooperate in sharing information and expertise in developing the geothermal resources in the three countries. The MoU was signed by the Heads of State of the three countries Kenya, Rwanda and Uganda, under the Northern Corridor Regional Integration Project. Under the MoU, the Government of Kenya through its Geothermal Development Company (GDC) is to extend technical support to the two countries Rwanda and Uganda. In 2015 the staff of GDC undertook preliminary field visits to Kibiro, Buranga and Katwe geothermal prospects.

Kibiro: Under the ARGeo supported Project, the DGSM with support from the Geothermal Development Company (GDC) of Kenya undertook geothermal exploration surveys at Kibiro which included MT/TEM resistivity surveys, soil gas flux sampling and Radon measurement. The data collected was analyzed and the results show low resistivity anomalous area in the sediments between the escarpment and Lake Albert and possibly extending under the Lake.

Buranga: Preliminary geochemical surveys were carried out at Buranga geothermal resource area. The aim was to sample thermal waters, analyze them using recently installed equipment and compare with previous results.

Katwe: Field mapping was focused mainly along the main NE-SW rift bounding fault. Most of the surface manifestations are aligned along this main rift bounding fault. The NE-SW main fault extends to considerable depths which led to escape of magma as evidenced by the several volcanic explosion centers. Permeability is presumed to be restricted to this main fault bounded zones. Exposed tufa towers at Katwe are presumed to have formed under the lake Katwe. The tufa towers are remnants of the hot springs which have since cooled down and the geothermal fluids no longer reach the surface possibly due to the self-sealing nature of geothermal systems in a carbonatite environment.

Geosciences Data

Spatial data was reviewed for all new and renewal applications for mineral rights to ensure no overlap with other licenses. There was validation of shapes/geographical area for four hundred and twenty seven (427) mineral rights license applications for various mineral commodities to check availability of area for mineral rights and compliance to technical and legal requirements. For applications with shapes overlapping with other licenses an area adjustment notification including the geographical area was generated inquiring if the applicant is willing to retain the remaining percentage of the applied area.

Earthquakes Monitoring

The Seismological Unit carried out maintenance of earthquake monitoring stations installed at Kilembe, Mbarara and Entebbe. The Existing National Earthquake Information was updated to improve the mapping of tectonic zones in the country. The processing of the collected waveform data and archiving was done in order to produce electronic earthquake bulletins. The unit also carried out testing of seismic equipment in preparation for installation of new seismic stations.

The key challenges in the energy and mineral sector:-

- Delays in conclusion of RAP implementation processes mainly due to issues related to land administration in Uganda.
- Inadequate resource envelope to enable the undertaking of core activities in an effective and efficient manner.



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PERMANENT SECRETARY

1.0 INTRODUCTION

This Annual Report is divided into six (6) chapters and outlines the mandate, composition and organisation of the Ministry of Energy and Mineral Development. It also states the Vision, Mission, Guiding Principles & Core Values, Strategic Objectives and Key priorities of the Ministry. The Report gives the outputs of the Ministry for the calendar year 2015. It points out the major challenges affecting service delivery of the Ministry.

1.1 Mandate of the MEMD

The mandate of the Ministry of Energy and Mineral Development (MEMD) is ***“To establish, promote the development, strategically manage and safeguard the rational and sustainable exploitation and utilisation of energy and mineral resources for social and economic development”***.

1.1.1 Vision

To be, “A model of excellence in sustainable management and utilization of energy and mineral resources”

1.1.2 Mission

“To ensure reliable, adequate and sustainable exploitation, management and utilization of energy and mineral resources in Uganda”

1.2 Roles and Functions

The roles and main functions of the Ministry are as follows: -

- i) To provide policy guidance in the development and exploitation of the Energy, Mineral, Oil and Gas resources.
- ii) To create an enabling environment in order to attract investment in the development, provision and utilisation of energy and mineral resources.
- iii) To acquire, process and interpret technical data in order to establish the energy and mineral resource potential of the country.
- iv) To inspect, regulate, monitor and evaluate activities of private companies in energy and mineral sectors so that the resources are developed, exploited and used on a rational and sustainable basis.

1.2.1 Guiding Principles and Core Values of the Ministry

In executing its mandate, the Ministry promotes and practices the following:

- Professionalism
- Integrity
- Transparency
- Innovation
- Customer focus
- Fairness and equity
- Predictability

1.2.2 Strategic objectives and goals for the Medium Term

In order to contribute effectively to the national objectives as enshrined in the National Development Plan, the Sector's policy goals are: -

- i) To meet the energy needs of Uganda's population for social and economic development in an environmentally sustainable manner.
- ii) To use the county's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society.
- iii) To develop the mineral sector for it to contribute significantly to sustainable national economic and social growth.

1.2.3 Main Priorities

In the medium term, the key priorities of the Ministry are to: -

- (i) increase electricity generation capacity and transmission network;
- (ii) increase access to modern energy services through rural electrification and renewable energy development;
- (iii) promote and monitor petroleum exploration and development in order to achieve national production;
- (iv) develop petroleum refining and pipeline transportation infrastructure;
- (v) streamline petroleum supply and distribution;
- (vi) Promote and regulate mineral exploration, development, production and value addition; and
- (vii) Inspect and regulate exploration and mining operations

Other priorities are: -

- (i) promotion of efficient utilisation of energy;
- (ii) monitoring geotectonic disturbances and radioactive emissions.

1.2.4 Major Strategies

To achieve the above priorities, the following major strategies were adopted: -

- (i) To review and put in place modern policies and legislation that offers a conducive business environment.
- (ii) Increase the energy mix in power generation, promote and co-invest in the development of new power generation and transmission projects.
- (iii) To acquire and provide necessary information and data to attract and facilitate private sector participation and capital inflow.
- (iv) Promote and / or implement rural electrification through grid extension, development of decentralised power supply systems and use of renewable energy resources.
- (v) Promote and monitor petroleum exploration, development and production by the private sector for local consumption and export.
- (vi) Promote and monitor mineral exploration, development, production and value addition by the private sector for local consumption and export.
- (vii) To carry out specialized and general training of manpower and strengthening capacity of the institutions responsible for managing and safeguarding the energy and mineral resources.
- (viii) Carry out energy audits and consumer awareness campaigns for energy efficiency.

- (ix) Establish standards and promote product quality, industrial safety, environmental protection and code of practice in petroleum supply operations.
- (x) Promote more efficient modes of transportation, in order to maintain security of petroleum products supply and curb smuggling.
- (xi) Monitoring and acquisition of seismic data and radioactive emissions.

1.3 The Ministry's Organizational Structure and Establishment

At the end of reporting period the Ministry of Public Service had approved a new structure for the Ministry of Energy and Mineral Development consisting of three Directorates and 11 departments. The three Directorates are: Energy Resources Development, Petroleum and Geological Survey and Mines. The 11 departments are:

- (i) Sector Planning and Policy Analysis;
- (ii) Renewable Energy;
- (iii) Energy Efficiency and Conservation;
- (iv) Electrical Power;
- (v) Petroleum Exploration Development & Production (Upstream);
- (vi) Midstream Petroleum;
- (vii) Petroleum Supply & Distribution (Down Stream);
- (viii) Geological Survey;
- (ix) Geothermal Resource;
- (x) Mines; and
- (xi) Finance and Administration

In addition to the above, the ministry has the following agencies and parastatals under its mandate, namely: Kilembe Mines Limited (KML), Uganda Electricity Generation Company Limited (UEGCL), Uganda Electricity Transmission Company Limited (UETCL), Petroleum Authority of Uganda (PAU), Uganda National Oil Company (UNOC), Atomic Energy Council (AEC) and Uganda Electricity Distribution Company Limited (UEDCL). The power sector regulator - Electricity Regulatory Authority (ERA), Electricity Disputes Tribunal (EDT) and the Rural Electrification Agency (REA), receive policy guidance from the Ministry.

The political leadership of the Ministry consisted of the Minister of Energy and Mineral Development, Hon. Eng. Irene Muloni and two Ministers of State, Hon. Simon D'Ujanga and Hon. Peter Lokeris for Energy and Mineral Development respectively. The Permanent Secretary and Chief Executive of the Ministry was Mr. F.A. Kabagambe-Kaliisa, deputised by Eng. Paul Mubiru - Director of Energy Resources Development. The organisational structure for the Ministry is represented in Appendix 1.

2.0 THE ENERGY RESOURCES SUB SECTOR



The Energy Resources Directorate constitutes the following departments and unit:

- i. Energy Efficiency and Conservation Department (EECD),
- ii. Electrical Power Department (EPD) and
- iii. Renewable Energy Department (RED)
- iv. The Nuclear Energy Unit

The Directorate is responsible for a number of programmes and projects that work in collaboration with the above departments. The projects/programmes include:

- i. Energy for Rural Transformation (ERT) II
- ii. Promotion of Renewable Energy and Energy Efficiency Programme
- iii. Electricity Supply Development Project (ESDP)
- iv. Large Hydropower Projects
- v. Small Hydropower Projects

Fig. 3: Management of the Energy Resources Directorate

2.1 Legislation Review in the Energy Sub sector

2.1.1 The Electricity Act 1999

Review of the Electricity Act 1999 progressed for amendment that will be presented to Parliament in 2016. The key objectives of the amendments are:

- a. To provide for a staggered term of office for the members of the Electricity Regulatory Authority;

- b. To provide for additional functions of the authority; to increase the amount of money to be given to the authority from 0.3 to 1 percent of the revenue received from generated electric energy;
- c. To provide for the procedure under which licensees shall transfer generation assets to the Government;
- d. To prescribe the circumstances under which a holder of a generation licence may supply electricity to persons other than a bulk supplier;
- e. To establish the Rural Electrification Commission as a body corporate;
- f. To provide for offences;
- g. To provide for the membership of the Electricity Disputes Tribunal and for the funding and staffing of the tribunal; and
- h. To provide for related matters.

2.2 Energy Efficiency and Conservation

2.2.1 Energy Efficiency and Conservation Bill

The overall objective of this legislation is to provide for the legal, institutional and regulatory framework for energy efficiency and conservation in Uganda. A Cabinet memorandum containing the Principles to be embodied in the Bill was prepared and shall be presented to Cabinet in January 2016. Preparations for the bill to be presented to Parliament for approval are underway.

2.2.2 Energy Efficiency Standards and Labelling of Appliances Program

Lighting Equipment Test Bench

The MEMD procured Testing Equipment for lighting appliances, under the ERT II project. The equipment was delivered and installed at the UNBS premises, Nakawa in June 2015. The equipment can test for the efficacy (lumen/watt), power consumption (watts), Power Factor (PF), Color Rendering Index (CRI), Correlated Color Temperature (CCT), mechanical strength of the caps, fire resistance of the lights.



Fig. 4: Unloading of the test equipment upon arrival at the UNBS laboratory in Nakawa



Fig. 5: MEMD and UNBS staff undergoing training in utilisation of the test bench

2.2.3 Sample Testing Exercise

In order to test for the suitability of the lighting appliances on the market in Uganda, and with support to from the ERT II, 50 lighting appliances were randomly selected from the market in Kampala central business area. UNBS has continued with the testing of the various appliances on the market.

2.2.4 Energy Efficiency Standards Importers User Guide

Owing to the fact that the standards may highly be technical for the ordinary business man or importer or indeed the consumer to follow, the Ministry and UNBS developed this guide to assist all stakeholders understand and consequently comply with the set standards.

2.2.5 Energy Labels for selected appliances

Alongside the energy efficiency standards, the comparative energy labels were developed. The standards contain parameters related to energy consumption which the appliances imported into Uganda must conform to, a summary of which is printed on the energy label for consumers' information.

Importance of Labels

Energy-efficiency labels are helpful and are to be affixed to products on market to describe the product's energy performance (in the form of energy use, efficiency); these labels give consumers the data necessary to make informed purchases. Energy labels empower consumers to make informed choices about the products they buy and to manage their energy bills. They will guide the consumer on which appliance consumes more electricity than the other. The Energy label is intended to be used as a guide to the consumers in choosing the most efficient appliance to buy. For the example, in the figure below, "Grade 5" tells the consumer that the appliance consumes less electricity. Thus the consumer will in the long run spend little money for use of such an appliance. Lower numbers indicate high energy consuming appliance and the consumer ends up by paying more money for lower numbers indicated on the label on the appliance. Consultations were finalized on the design of the labels and draft samples with specifications of the labels being produced.

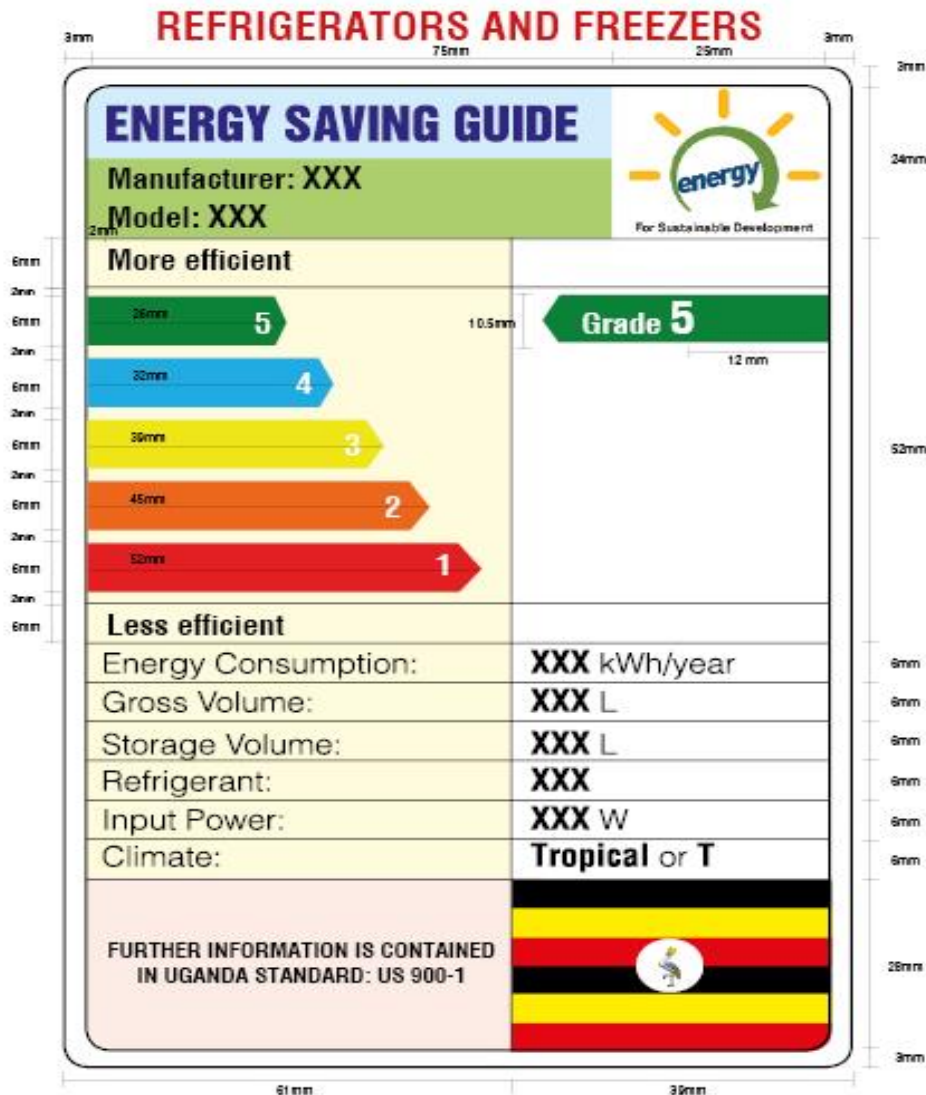


Fig. 6: The draft Energy Label

2.2.6 Energy Audits in Industries, Commercial Buildings and Public Institutions

Energy audit and management training commenced in April 2015 as part of the energy efficiency improvements for high energy consuming companies. Energy auditors were trained by GFA consultants and energy audits were conducted for 15 high energy consuming facilities which included: Hima Cement, Luuka Plastics, Mukwano Industries, Workers House, Steel Rolling Mills, Nile Breweries, Century Bottling Company (Coca Cola), Golf Course Hotel, Wagagai Flower Farm, Reco Industries, Mcleod Russel (Ankole Tea Estate), Oasis Mall, Crested Towers, Speke Resort-Munyonyo and Pramukh Steel. The Audits revealed that there's a potential for energy savings of at least 5% among many enterprises.

2.2.7 Training and Capacity Building

MEMD in cooperation with GIZ – PREEEP and Uganda Manufacturers’ Association (UMA) designed an energy management programme for large energy consuming facilities. The objective of this programme is to support high-energy consuming facilities in their efforts to reduce energy consumption. The facilities chosen for the practical energy audit training were: Ugachick Poultry Breeders Ltd, Quality Chemicals Ltd, Ntake Bakery Company Ltd, Crown Beverages Ltd (PEPSI) and Roofing Rolling Mills Ltd. The participants in the training workshop were from 18 companies who have never participated in the energy management and energy audit trainings organized by GIZ and MEMD.

2.2.8 Training in Business Models and Financing Options for Energy Efficiency Measures in Uganda

In a joint programme MEMD and GIZ are promoting energy efficiency in industries in Uganda. A Business Modelling and Financing Options for Energy Efficiency Measures workshop full day workshop was held on 11th November 2015, at the Golf-Course Hotel, aimed at providing an understanding of the potential of energy efficiency measures, to transfer knowledge on financing options and models, and to enlighten participants on the market potential. The available financing option from the French Development Agency was presented and discussed among the participants.



Fig. 7: Participants from the energy sector undertaking a financial modeling course on energy management at the Golf course hotel, Kampala 11th November 2015.

2.2.9 Awareness and Promotion

Energy Week 2015

The annual energy week 2015 was held from 14th to 19th September 2015. Through this platform, awareness regarding energy use and conservation was created. The theme for last year's energy week was **"Energy, the Engine for Socio - Economic Development"**. This theme was chosen in recognition of the fact that Energy is a key driver of economic growth and development in Uganda. It provides vital input into the productive and social sectors of the economy, greatly enabling social and economic development. The following were the key events that took place during the energy week. Energy Exhibition at UMA Conference parking lot, Lugogo. 100 companies and institutions in the Energy Sector participated in the five day exhibition.



Fig. 8: Energy efficiency and renewable energy technologies at the Energy Week 2015 exhibition at UMA Parking lot Nakawa

A Symposium on Energy Management in the Electricity Sub-Sector was conducted during the Energy Week 2015 to focus on possible interventions that are aimed at improving power quality and reduction of losses in the entire electricity supply and consumption value chain. The symposium also explored the progress on the adoption of Energy Efficiency Systems and Practices. This symposium brought together power suppliers, regulators, policy makers, power end users (consumers), service providers, development partners and civil society organisations to discuss the pertinent issues that move the sector towards an energy efficient society. It took place on Thursday, 17th September 2015 at Imperial Royale Hotel Kampala.

Launch of the Clean Start Programme

Clean Start is a programme of the United Nations Capital Development Fund (UNCDF), which focuses on offering a range of financing solutions for low-income people that want to pay for high-quality, affordable clean energy was launched during this year's energy week. The programme targets to support 40,000 low-income people to make the shift to clean energy. This programme will be implemented by MEMD, REA and UECC and the private sector.

2.2.10 Sustainable Energy in Collaboration with ESKOM

The Ministry of Energy and Mineral Development in partnership with Eskom Uganda organized a three-day energy campaign known as the Sustainable Energy Campaign 2015 in Jinja town. This is an event expected to take place on a quarterly basis and it is aimed at increasing the levels of awareness among the public on the available sustainable energy technologies. This is achieved through an Exhibition, press conferences, awareness materials and road shows and road drives. The sustainable energy Campaign took place from 4th to 6th December 2015 with a number of activities including, the press conference held in Kampala at Amber house and the exhibition at Rippon Gardens in Jinja town then the road drives were in Jinja town and the neighbouring trading centres like Mbiko, Iganga, Njeru to mention but a few.



Fig. 9: The Commissioner EECD, Mr James Baanabe with the Guest of Honour, South African High Commissioner to Uganda, Major General Lekoa Solly Mollo and the MD ESKOM Uganda during the launch of the Jinja Sustainable Energy Campaign 2015

2.2.11 Update on Sustainable Energy for All (SE4All) Initiative in Uganda

The SE4ALL Initiative is set to achieve three inter-related objectives by 2030, namely:

- a) Ensuring universal access to modern energy services from 15% to over 98% of the population.
- b) To have over 99% of the population with access to modern cooking solutions.
- c) To improve energy efficiency by a minimum of 20% and to reduce wood fuel consumption by 40%.
- d) To increase the renewable energy share in the total final energy consumption for electric power to over 90% and to increase the share of renewable energy for thermal purposes to 36%.

With Technical Assistance and support to the SE4All Secretariat, the EU and the UNDP, the Uganda's SE4All Action Agenda was developed, completed and validated on 18th June 2015 at a technical workshop which brought together key stakeholders in public, private and civil society. The Action Agenda proposes High Impact Opportunities (HIOs) which are action areas that are likely to show significant potential in advancing the three SE4All objectives in Uganda.

Currently in Uganda, the production capacity of quality improved cook stoves varies between 240,000 and 300,000 per year and yet the distribution network for these improved cook stoves is still poor. To achieve universal access to clean cooking for households, the Action Agenda proposes a production of 1.35 million units annually to meet the estimated demand of 21.4 million units towards 2030. A draft cabinet memorandum of the Action Agenda was completed and is undergoing review before it can be presented to Cabinet for approval and endorsement of the Action Agenda as the national implementation framework.

The EU provided technical assistance to the Secretariat to develop the Investment Prospectus (IP) for SE4All. The IP is a pipeline of projects and programmes including their investment requirements that may be presented to potential public and private investors. In 2015, needs assessment studies were undertaken in the pilot districts of Kasese, Kaabong and Jinja and district Action Agendas were developed. The proposed actions from the needs assessment will be implemented and thereafter the lessons learnt will be used to replicate the initiative in other parts of the country. During the United Nations General Assembly in New York on Sustainable Energy For All Forum held in June 2015, a joint declaration was signed between The Republic of Uganda, represented by the Ministry of Energy and Mineral Development, and The European Union, The Republic of France and the Federal Republic of Germany to reinforce cooperation in the field of Sustainable Energy.



Fig. 10: Hon.Eng.Irene Muloni, Minister of Energy and Mineral Development together with Mr. Friedrich Kitschelt Permanent Secretary in the Ministry for Economic Cooperation and Development (BMZ), Mr.Neven Mimica, EU Commissioner for International Cooperation and Development, and H.E. Ambassador Francois Delantre, Permanent Representative of France to the UN at the Signing Ceremony in New York, June 2015

2.3 Electric Power Supply

Government has continued with its commitment to sustainably develop additional electricity generation, transmission and distribution infrastructure to support Uganda's move towards middle income status as well as ensuring universal access to affordable, reliable and modern energy services. This has significantly enhanced the power sub-sector's performance over the years. Government has made commitments at both regional and international levels to enhance electricity generation and transmission to facilitate power sharing among partner states through the East African Power Pool (EAPP).

The national electrification level currently stands at 17% with the per capita electricity consumption being 80 kWh.

Uganda Electricity Transmission Company Ltd (UETCL) holds the role of system operator, bulk power purchase and sale under the licenses given to it by the Regulator. In addition UETCL has acquired the role of public infrastructure service provider through the roll out of its Optical Fiber network along its High Voltage Transmission Grid. The performance in executing the responsibilities under the system operator license is presented below.

Table 1: UETCL Performance Review up to 2015

Year	2010	2011	2012	2013	2014	2015
Uganda Maximum Domestic Demand (MW)	423.99	445.87	498.26	492.46	505.57	520.68
Total Domestic Energy Generation (GWh)	2,455.9	2555.1	2829.4	2993.0	3,171.33	3283.28
Total Kenya Net Energy Export / (Import) (GWh)	0.03	(-4.15)	6.43	4.87	78.05	11.38
Total Tanzania Energy Export / (GWh)	45.3	50.94	57.75	54.44	55.65	61.23
Total SNEL Energy (DRC) Export (GWh)	-	1.604	2.449	1.929	2.44	2.25
Total REG (Rwanda) Energy Export (GWh)	-	3.3	1.834	1.169	2.59	1.94
Total REG (Rwanda) Energy Import (GWh)		2.75	3.20	3.03	3.68	3.49
Eskom Hydro Energy (GWh)	1,254.8	1360.8	1275.37	1239.14	1,228.38	1303.85
Bujagali Hydro Energy (GWh)	-	-	972.46	1375.57	1,365.66	1456.61
Total Thermal Generation (Diesel &HFO) (GWh)	1,023.9	957.9	275.40	1.88	88.21	73.43
Total Co – Generation (GWh)	85.1	60.1	94.096	125.45	213.55	172.29

Domestic Consumption-Constrained(GWh)	Energy	2410.6	2512.3	2765.8	2927.35	3,011.26	3209.97
Domestic Energy Consumption -Unconstrained(GWh)		2420.3	2639.2	2828.1	2929.12	3,012.26	3211.58
Peak time Maximum scheduled load shedding (MW)		45.1	162.3	132.30	0	0	0
Energy not supplied due to unscheduled Load shedding (GWh)		9.7	127.0	62.4	1.77	0.997	1.610
UETCL Transmission Losses Annual Average (%)		4.2	3.35	3.98	3.6	3.27	3.45
Average Annual System Load Factor		0.68	0.68	0.68	0.69	0.67	0.72
Average Annual Uganda Load Factor		0.68	0.70	0.70	0.70	0.68	0.72

Source: UETCL Annual Power System Report for 2015

A total of 3,211.90GWh of electricity were purchased by UETCL in 2015 from various sellers compared to the 2,488.3 GWh that were purchased in 2010, a 29.08% increase in energy purchases within the five year period and an increase of 0.28% between 2014 and 2015.

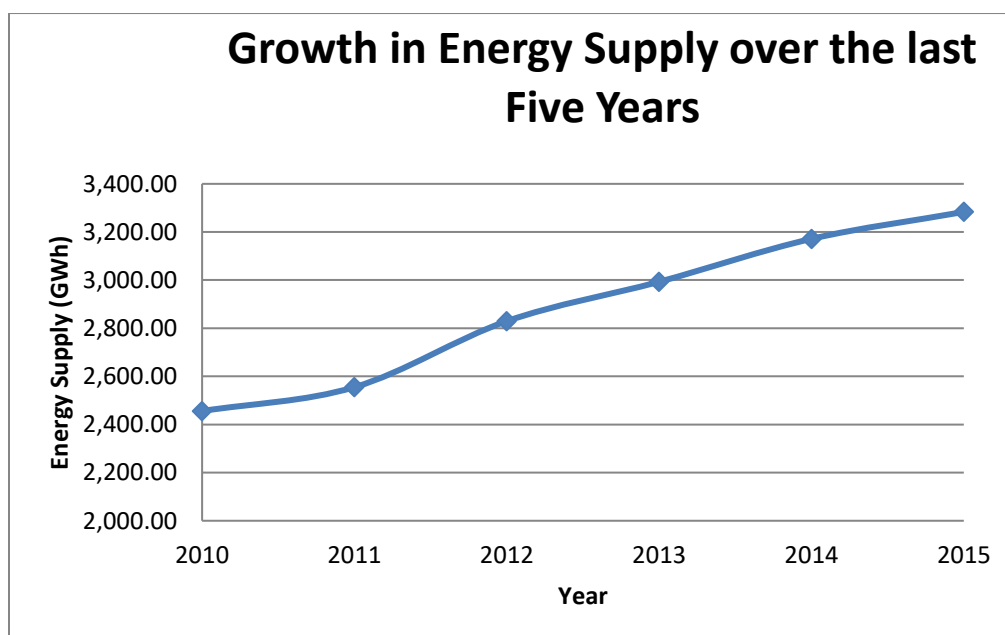


Figure 11: Growth in Energy Supply over the last five years

Table 2: Installed capacities for Electricity Generation Companies in Uganda

Generator	Operator	Technology	Installed Capacity (MW)
Bujagali Hydro Power Plant	Bujagali Electricity Company Ltd (BEL)	Hydro	250
Nalubaale and Kiira HPPs	Eskom (U) Ltd	Hydro	380
Mpanga	Africa Energy Management systems, Mpanga	Hydro	18
Bugoye (Mobuku II)	Bugoye Hydro Ltd	Hydro	13
Kabalega (Buseruka)	Hydromax Ltd	Hydro	9
Ishasha	Eco-Power Ltd	Hydro	6.6
Mobuku I	Tibet Hima Mining Co Ltd	Hydro	5.0
Mobuku III	Kasese Cobalt Compan	Hydro	9.9
Namanve	Jacobsen (U) Ltd	Thermal	50
Tororo	Electro-Maxx (U) Ltd	Thermal	86
Nyagak I	West-Nile Rural Electricity Company	Hydro	3.5
Kakira	Kakira Sugar Ltd	Co-generation	50
Kinyara	Kinyara-Sugar Works Ltd	Co-generation	14
Lugazi Sugar	Sugar Cooperation Uganda Ltd (SCOUL)	Co-generation	9.5
Kaliro Sugar	Sugar & Allied Industries Limited (SAIL) (subsidiary of the Alam Group)	Co-generation	11.9
		TOTAL	916.4 MW

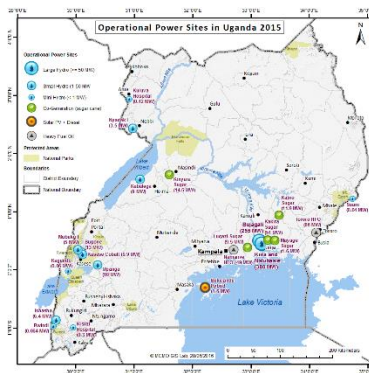


Fig 12: Map of Uganda showing the location of operational power sites in Uganda

2.3.1 Large Hydropower Projects

a. Development of Karuma Hydropower Project (600MW)

In order to increase oversight and supervision of works at the project site, MEMD and UEGCL stationed permanent staff at the project site in May 2015. UEGCL further contracted another consultant, AF Consult Ltd to help the supervising consultant-Energy Infratech. Works at the project site progressed well and significant milestones were reached during the reporting period which include completion of excavation of underground tunnels i.e. Main Access Tunnel, Escape and Ventilation Tunnel, SAVT, ATAP, MTET, ADIT 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and we are at 4th bench of the Power house cavern and Main transformer cavern (MTC).



Fig. 13: MEMD and UEGCL Officers inspecting the anchoring of the Crane beam in the underground power house

By close of 2015, works at the outfall was 84% complete. The open excavation at the power intake, ground surface clearing and levelling, together with the diversion channel and open excavations in soil and rock, support on the slope and the construction of sub-cofferdam was completed. Other construction facilities completed include: Site Clinic; Site Quality Control Laboratory; Repair Plant; Mechanical and Electrical Warehouse and Material warehouse. Works also progressed on other areas as follows: Two aggregate processing plants on the left and KWR have been set producing 350 T/h and 300 T/h respectively. Also two batching plant at KWR each 90 m³/h and other two on the left bank each 120 m³/h but at the moment one is in operation.



Figure 14: The Batching Plant on the left bank of the river was completed and is operating

Generally the project is on course, with completion time line slated for 15/12/2018. There were delays in the engineering activities of the Electrical & Mechanical equipment (E&M), which may not affect the commissioning of the project, but such delays need to be curbed immediately. The EPC contractor was asked to submit a detailed schedule of engineering, procurement and erection activities of the E&M equipment as well as the Hydro Mechanical (HM) equipment on topmost priority.

b. Isimba Hydropower Project (183 MW)

During this period, the initial development phase which includes construction of camps, access roads, provision of electricity to various work fronts, and the engineering designs was completed. MEMD and UEGCL mobilized a team of engineers to the project site to increase oversight and supervision of works by the contractor.

Construction works at the project site are progressing well and the foundation pit and geological mapping of the excavated foundation surface of the power house were completed.

The EPC contractor successfully carried out foundation cleaning for the spillway section. Excavation for the first stage structures was completed in September 2015.



Fig. 15: Spillways partially concreted to elevation 1026 and 1029 ft respectively (September 2015)



Fig. 16: CWE staff assembling the spiral casing formwork and draft tube embedded parts (September 2015) at Isimba HPP

The aggregate crushing plant and concrete plant were completed and commissioned in June 2015. Completion of the aggregate and concrete batching plant marked the commencement of major concrete works. The Concrete pouring ceremony presided over by H.E. the President of the Republic of Uganda was held in July 2015. The Ministry carried out investigations into allegations of impacts due to blasting activities on the communities in the vicinity of the project. The EPC contractor conducted the baseline survey within 2km radius of the Nakatooke quarry blast radius. The project has been issued the EIA certification from NEMA.

RAP Implementation

Implementation of the Resettlement Action Plan (compensation) for both the Isimba dam area and the transmission line continued. By end of December 2015, 95% of the PAPs affected by the Power Plant and 85% affected by the transmission line had been paid. The delays in conclusion of the RAP implementation process is mainly due to refusal of the valuation from the CGV by some PAPs and such cases are before the courts of law. Delay was also due to conflict of ownership between claimants. The project is on schedule to be completed by the end of 2017.

c. Ayago Hydro Power Project

The feasibility study for the project was reviewed by the consultant, WAPCOS and recommended for adjustment of the installed capacity for Ayago HPP from 600MW to 840MW.

The Ministry of Energy and Mineral Development had planned to achieve financial closure for Ayago HPP and commencement of construction works by the end of 2015. Financial closure was not attained from the same financier (China EXIM bank), pending negotiations.

2.3.2 Medium size hydropower and Minihydro projects

a. Achwa hydropower projects (83MW)

This project is being developed by a consortium of PAC SPA and Berkerly Energy. The feasibility study for the associated transmission line, financed by Government of Uganda was completed in June 2015. The firm licensed to develop the site is finalizing negotiations of the Power Purchase Agreement (PPA) with Uganda Electricity Transmission Company Limited (UETCL) and is also negotiating an Implementation Agreement with the Ministry of Energy and Mineral Development. The European Investment Bank (EIB) is interested in funding the project and a request was sent to Ministry of Finance, Planning and Economic Development to formally submit the project to EIB for financing.

b. Muzizi hydropower projects (44.7MW)

Implementation of the 44.7MW Muzizi hydropower project commenced and is progressing with design review. The implementing consultant's contract was signed in August 2015. RAP implementation is still ongoing.

c. Nyagak III (4.4MW)

M/S Hydromax Ltd was procured as the private partner to develop the project. The RAP implementation process is still ongoing.

2.3.3 GET FIT

The main objective of the GET FIT program is to assist Sub-Saharan African nations in pursuing a climate resilient low-carbon development path resulting in growth, poverty reduction and climate change mitigation. In Uganda GET FIT intends to fast-track a portfolio of up to 20 smallscale renewable energy (RE) generation projects, promoted by private developers. Depending on the funding situation and individual progress, the portfolio may yield a combined installed capacity of up to 170 MW. This will correspond up to approximately 830 GWh of energy production per year, transforming Uganda's energy mix within a period of 3-5 years, and resulting in:

- a) emission reductions of roughly 11m tons of CO₂ over the 20 year lifespan of the PPA;
- b) increase in Uganda's energy production by about 20%, facilitating (or significantly improving) access to energy for at least 200,000 additional households (approximately 1.3M people), also in rural areas due to strengthening of regional grids;
- c) Leveraging of close to USD400million in private investments for renewable energy generation projects with a limited amount of results-based grant funding.

In 2015, the GET FIT portfolio grew through the third and final RFP round, despite the exclusion of three projects approved in RFPS 1 and 2. The portfolio now totals 17 projects: Fourteen hydro, one bagasse and two solar PV power projects. Overall, one project has been commissioned, six are under construction and four projects have reached financial closure. Most other developers are on the verge of financial closure and/or construction start. Nonetheless, continued progress and construction start for additional projects within 2016 is vital to ensure timely achievement

of the overall objectives.

During 2015, the first six GET FiT hydropower projects commenced construction activities. Representing a planned combined generation capacity of 37 MW and an annual energy production of 177 GWh, these groundbreakings represent a considerable step towards meeting the GET FiT capacity targets. In particular, the Siti I project (6.1 MW) in Eastern Uganda moved quickly and seems to be on track for commissioning in Q2 2017. Western region projects Waki, Nyamwamba, Rwimi and Muvumbe also commenced works and should be commissioned within the next two years. Other projects anticipated to begin construction in early 2016 are the Western Uganda hydropower projects Sidilia and Lubilia, and the solar PV projects in Soroti.

In another milestone for 2015, the bagasse-based power plant at Kakira (20MW) was officially commissioned as a GET FiT-supported project and received the first GET FiT premium payment. Due to various technical, environmental and legal reasons, several projects have delayed groundbreaking beyond what was expected upon entering the program. In order to utilize the window of opportunity for GET FiT to supply clean energy to the Ugandan grid, supported plants need to move steadily and efficiently towards commissioning. Most delays are legitimate but they still present a risk to achieving the program goals. Hence, while all stakeholders are delighted to have seen several projects accelerate in 2015, more groundbreakings must follow in 2016 to secure progress against capacity targets.

Status of GET FiT projects

a. Kikagati (16MW): The Bilateral Agreement between Tanzania and GoU was signed in July 2015. This enabled the new owner, M/S Berkley Energy, to resume preparatory work. Both the Steering Committee and Investment Committee of GET FiT have emphasized the importance of quick advancement of the project after the signing of the agreement, which GET FiT will aim to safeguard through imposition of strict deadlines for the project advancement and CP compliance. A strict timeline with milestones has been imposed to get the project back on track, with construction slated to start within the first half of 2016 and COD in first half of 2018.

b. Sindilia: The developer signed the DFA with GET FiT in August 2015. Expected COD is in Q4 2017, with construction start expected in Q1 2016. Reinforcement of the 87 km long 33kV line from Bundibugyo to Fortportal will be required to ensure viable power evacuation from the power plant. This reinforcement is an item under the GET FiT interconnection support component, which will also benefit the recently GET FiT approved and neighbouring project Ndugutu HPP. Funding for this reinforcement has been secured from development partners.

c. Waki (4.8MW): All agreements for the project have been signed and the developer launched early construction activities in May 2015. The developer struggled to clear environmental and social CPs and the early construction phase has seen issues raised, that require further follow up.

d. Rwimi (5.4MW): The project reached financial closure and has initiated early construction works, with official groundbreaking in September 2015. The expected commercial operation date is Q2 2017. The project is actively trying to clear some remaining environmental and social issues.

e. Muvumbe (6.5MW): Throughout early 2015, the developer Vidullanka struggled with the condition precedent compliance process. However, the project has now signed a financing agreement with GET FiT and the developer commenced construction works in September 2015. The expected COD is Q2 2017. The PPA and IA for the plant have been signed and project financing has reportedly been secured.

f. Lubilia: The developer has signed all agreements and finalized negotiations with the EPC contractor. While some minor issues remain to be addressed, the project is expected to reach financial closure and commence construction within the first half of 2016 after clearing the final environmental and social CPs. The expected COD is Q4 2017. In terms of interconnection, Lubilia is ideally placed only 3.2 km from the existing grid, and grid interconnection is not likely to present any challenges.

g. Siti I (6.1 MW): Construction commenced in March 2015. Siti I is the most advanced project in the GET FiT portfolio, and COD is Q4 2016. The developer has faced environmental and social challenges, in particular concerning displacement/compensation and Mount Elgon National Park. Notably, the developer has made considerable efforts to overcome these challenges.

h. Siti II (15 MW): Both the DFA and PPA have been signed and all required legal documentation for the project has been executed. However, expected COD is uncertain, as construction will need to be aligned with the progress of the Mbale-Bulambuli transmission line project, which is required for the power evacuation. An interim medium voltage solution to be constructed by REA has been proposed to ensure timely interconnection of the power plant.

i. Nyamwamba (9.2MW): The developer signed all the necessary agreements and the lender approved the credit facility for the project. The project started construction in Q4 2015, and the expected commercial operation date is in Q4 2017. The project experienced significant delays due to flooding of river Nyamwamba which damaged critical access infrastructure (road and bridge) and required redesign of the scheme. Nyamwamba will require a 17 km dedicated medium voltage line for interconnection to the national grid which REA is committed to construct. The project still has outstanding environmental and social issues.

j. Kakira cogeneration (20MW): Kakira Sugar Ltd signed the GET FiT financing agreement in April 2015, and reached official COD when the PPA was signed in mid-2015. Consequently, Kakira Sugar Ltd became the first recipient of GET FiT premium payment in September 2015.

k. Soroti I & II: Ground mounted solar PV power plants, are to be located in Soroti district, with a planned peak capacity of 10 MWp (5MWp each) and average annual energy production of 17.6GWh. Construction start is planned for the beginning of February 2016 with commissioning in Q4 2016. Funding has been secured from development partners to upgrade the Opuyo substation, through which this and other pipeline solar projects in the Soroti area will interconnect to the grid.

I. Tororo South & North: Construction of ground mounted solar PV power plants, commenced in Tororo and Soroti districts, with a planned peak capacity of 10 MWp (5MWp each) and average annual energy production of 17.6 GWh.

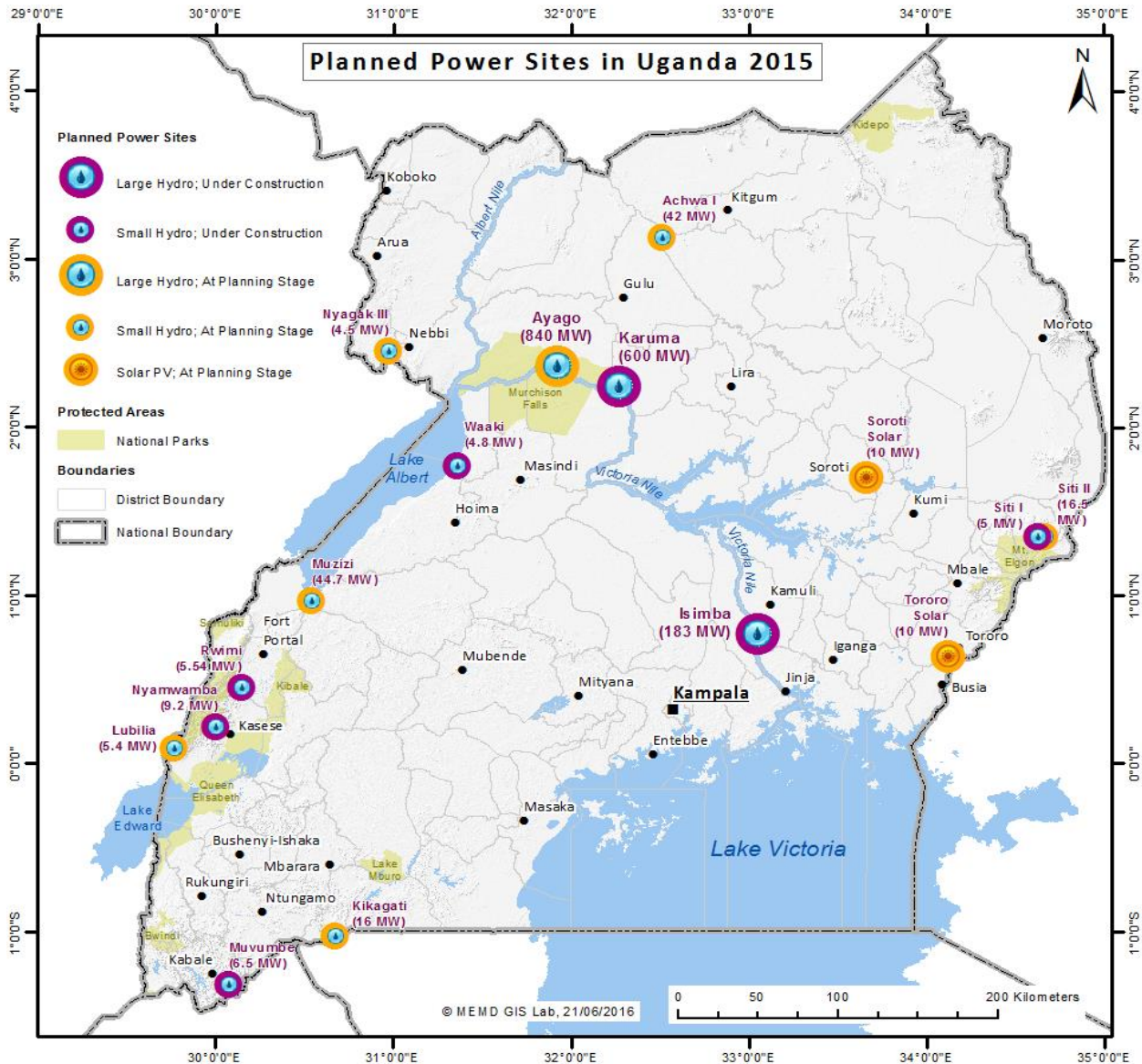


Fig 17: Map of Uganda showing the location of planned and ongoing Hydropower construction sites

2.3.4 Grid Development and Transmission Updates

During the reporting period, the Uganda Electricity Transmission Company Limited (UETCL) continued to implement a number of transmission lines and substations to the national grid infrastructure to boost power reliability in the different parts of the country. Some of the projects include the following:

a. Progress on the construction of the 220kV Kawanda-Masaka transmission line

The contractor for the project is M/S KEC International from India. Works are ongoing and all designs and factory acceptance tests (FATs) have been completed. 30% of works at site have been completed-46 towers have already been erected against a total of 372. Soil investigations, excavations, and foundation castings are ongoing for the remaining towers and stringing is scheduled to have begun by the end December 2015. Overall the project progress was reported at 55% against 60% of project period that has elapsed. The contractor has raised concerns with UETCL that it may not be able to meet its project completion time of August 2016 if the outstanding Right of Way (ROW) issues are not resolved in time.

b. Substation construction works at Kawanda, Masaka and Mbarara

The contractor is M/S Shandong Taikai Power Engineering of China. Due to poor designs submitted by the contractor for civil works and mechanical and electrical works, several approval iterations have been undertaken resulting into significant project delays. Substation works at Kawanda-Masaka/Mbarara substations are significantly behind schedule due to the inexperience of the contractor, Shandong Taikai Power Engineering Co. Ltd, which misrepresented its experience in substation construction during bidding. Manufacturing for substation major equipment (transformers, circuit breakers, disconnectors, and auxiliary transformers) has been completed. The supervision consultant (GOPA Intec) indicates that works are likely to be completed by April 2016.

c. RAP implementation for Kawanda-Masaka line

80% of the PAPs have been disclosed to and accepted the compensation packages but only 64% have been paid. The delays in land acquisition and compensation are mainly due to challenges in land title mutation and PAP disagreement of the CGV valuation of their land and property. The contractor for the transmission line, KEC International Ltd of India engaged Uganda Red Cross to implement the HIV/AIDS prevention training, child protection and sexual harassment program for workers, and community sensitization program. By December 2015, Red Cross had covered 4 out of 36 communities along the transmission line corridor.

d. Street and Market Lighting in Masaka

MEMD concluded the bid evaluation and the Bank gave a no objection for contract award.

e. Peri-Urban Electrification

The target is to provide 8,000 connections to eligible households within a 5 km radius of Kawanda-Masaka transmission line corridor. Under this component, household connection works are to be undertaken by UMEME, on a single-source basis. The Bank has given a no objection for a framework contract for household connections and the contract has been submitted for legal opinion to the solicitor general's office. MEMD completed the evaluation process for grid extension works and submitted to the Bank for clearance.

f. Utilization of savings

The World Bank mission and MEMD agreed that the savings of approximately \$40 million from Kawanda-Masaka transmission line could be utilised within the scope of the on-going ESDP

project, subject to meeting the Bank’s policy requirements in terms of safeguards. UETCL proposed the following investments for financing: i) construction of two 220kV line bays at Bujagali substation, ii) upgrade of the SCADA system for the transmission network, iii) a new 132/33kV Nkenda substation, iv) a 40 km Hoima-Kinyara 220kV line, and v) consultancy services for review of the designs and bidding documents for the proposed Hoima-Kinyara 220kV transmission line and Nkenda substation. In summary, the following table shows the on going transmission projects as at the end of December 2015.

Table 3: UETCL Projects Progress (As at December 31st 2015)

Item	Project	Status as at 31/12/2015
1	Bujagali Interconnection Project: Switchyard upgrade to 220kV	<ul style="list-style-type: none"> • Equipment erection 100% • Wiring and cabling is ongoing • Cabling and Configuration Protection and control systems • Ground levelling and Road works • Completion end of February 2016. • Commissioning March 2016
2	Karuma Interconnection Project	<ul style="list-style-type: none"> • Supervision Consultant on-board • On-going works with EPC Contractor – Design stage • RAP Implementation in progress
3	Nkenda – Fortportal – Hoima Project	<ul style="list-style-type: none"> • Approval of the 3 million USD disbursement request by AFD • Compensation of PAPs is 79% complete. • Kick-off meeting with EPC consultant was held • Detailed Survey: 99% • 12.3% Tower Foundations Completed
4	Mbarara-Nkenda/ Tororo-Lira Transmission Lines	<p>Lot 1:Tororo-Lira Transmission Line</p> <ul style="list-style-type: none"> • Total tower foundations completed: 528 out of 716 (73.7%) • Total tower erection completed: 472 out of 716 (66%) • Stringing of Conductor and Earth wire: 56.407km • Optical Ground Wire (OPGW) strung: 47.983 km • Pre-commissioning and Site Acceptance Tests on-going at the Tororo, Opuyo and Lira Substations <p>Lot 2:Mbarara – Nkenda Transmission line</p> <ul style="list-style-type: none"> • Total tower foundation completed: 214 out of 317 towers (67.5%) • Total tower erection completed: 198 out of 317 towers (62.4%) • Monopole foundation completed: 131 out of 136 locations (96.3%) • Monopoles erected: 129 out of 136 locations (95%)

Item	Project	Status as at 31/12/2015
		<ul style="list-style-type: none"> • Stringing of Conductor and Earth wire: 25.59km • Optical Ground wire (OPGW) strung: 20.83 km • Pre-commissioning tests at Mbarara, Nkenda and Fortportal Substations completed. • Control Building at Fortportal Substation complete.
5	NELSAP (Construction works of Bujagali-Tororo-Lessos and Mbarara-Mirama-transmission lines)	<ul style="list-style-type: none"> • The current disbursement level stands at 38% for ADF and 49.3% for JICA. • Foundation works are ongoing and 314no out of estimated 402no (78%) foundations are complete for lot A (Bujagali-Tororo-Lessos Line), while 289no (72%) towers have been erected. • Foundation works are ongoing and 188no out of estimated 211no (89%) foundations are complete for lot B (Mbarara-Mirama Line); while 164no (78%) towers have been erected. • Equipment foundation works are complete at Bujagali, Tororo (99%) and Mbarara substations (98%). Equipment erection works are ongoing, at Bujagali (35%), Tororo (57%) and Mbarara substations (66%). • Mirama substation site was handed over on 13th March 2015 and earthworks are still ongoing (98%); Excavation for foundations on-going (82%) • Designs are over 100% complete for Lot A and Lot B; • Designs are over 95% complete for Lot C (Substations); • RAP Implementation progress for Bujagali-Tororo-Lessos is 85% while Mbarara-Mirama is 95%. • The 18months construction periods for all the contracts were surpassed and extensions up to January 2016 and February 2016 have been agreed for lot A and lot B respectively. For lot C discussions are yet to be held to agree on a revised completion date but in the meantime a fourth interim time extension was granted up to 31st January 2016.
6	Hoima - Kinyara.	<ul style="list-style-type: none"> • Feasibility Study Completed • Conclusion of financing for Construction works of Hoima-Kinyara T/ lines and associated Substations from WB on-going • Pre-qualification of Supervision Consultant on-going • RAP Implementation on-going

Item	Project	Status as at 31/12/2015
7	Mbale - Bulambuli	<ul style="list-style-type: none"> • Feasibility Study Consultant Contract at Signature stage pending approval by Solicitor General and BoDs
8	Mirama - Kabaale	<ul style="list-style-type: none"> • Supervision Consultant Contract signature awaiting clearance from Solicitor General and BoDs. • Prequalification of bidders for EPC Contractor to commence • Loan for EPC was signed with ISDB yet no funds for RAP Implementation
9	Opuyo-Moroto Interconnection	<ul style="list-style-type: none"> • RAP implementation ongoing • EPC Supervision Consultant on board and currently preparing the Tender Document for the Transmission Line and Associated substations and the LV Reticulations.
10	Electrification of Industrial Parks Project	<ul style="list-style-type: none"> • RAP Implementation for Iganga Industrial Park on-going but awaiting more funds for RAP Implementation for Luzira, Mukono and Namanve South Industrial Park Transmission Line routes and Substations • Awaiting the signing of the loan agreement between China, EXIM Bank and GOU. Uganda Parliament approved the loan • Supervision Consultant and EPC Contractor on-board
11	Mirama-Kikagati-Nshongezi	<ul style="list-style-type: none"> • Feasibility Study is on-going and current contract expires in March 2016 • ESIA/RAP Study on-going • No Funds for RAP Implementation
12	Mutundwe- Entebbe Project	<ul style="list-style-type: none"> • RAP Implementation is on-going; however the funds are not enough to facilitate complete RAP Implementation. • Procurement for EPC Contractor on-going
13	Kawanda-Masaka 220kV transmission line and associated substations	<ul style="list-style-type: none"> • Supervision Consultancy Consultant is currently reviewing designs submitted by the EPC Contractors and supervising on going fieldworks • Transmission line works (47%) and Substation works (30%) complete. • Tower foundation works (48.6%) and erection works (45.9%) complete. • Manufacture of equipment and structures on-going • ROW and road clearance on-going

Item	Project	Status as at 31/12/2015
		<ul style="list-style-type: none"> • Soil Investigation tests on-going
14	Lira-Gulu-Nebbi-Arua	<ul style="list-style-type: none"> • The Feasibility Study and Tender Document Preparation complete • The ESIA/RAP study on-going
15	Lira-Gulu-Agago	<ul style="list-style-type: none"> • Feasibility Study and Tender Document completed • ESIA/RAP Study still on-going • No RAP Funds for the project
16	Queensway 132kV Substation	<ul style="list-style-type: none"> • EPC Civil Works on-going • Estimated commissioning is January 2017
17	Masaka-Mbarara	<ul style="list-style-type: none"> • Feasibility Study and Tender Document Preparation Complete. • ESIA and RAP Completed • EPC to be financed by kfW • No RAP Funds
18	400kV Interconnection	<ul style="list-style-type: none"> • Feasibility Study On-going
19	Greater Kampala Metropolitan Area	<ul style="list-style-type: none"> • Survey is on-going for probable financing by JICA
20	Masaka– Mwanza 220kV Line	<ul style="list-style-type: none"> • Procurement of Consultant to update the Feasibility Study. • It is handled by TANESCO and under kfw Financing
21	Nkenda–Beni – Bunia 220kV Line	<ul style="list-style-type: none"> • Submitted Feasibility Study to PTA Bank for possible Financing

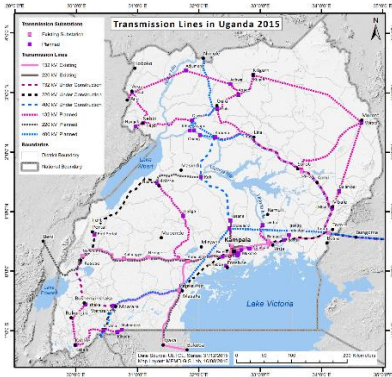


Fig 18: Map of Uganda showing the planned and existing transmission lines

2.3.5 Rural Electrification Status as at December 2015

Government has continued to electrify the rural areas in the country and now stands at 7%. Only 4 out of the 112 districts are yet to be connected to the grid. The District Headquarters of Bukwo and Nwoya districts, the grid connection is under construction. For Buyende, Kaabong and Kotido districts, the procurement of EPC (Engineering Procurement & Construction) contractors is ongoing and one district, Buvuma, is at Feasibility Study Stage. The status is as shown below.

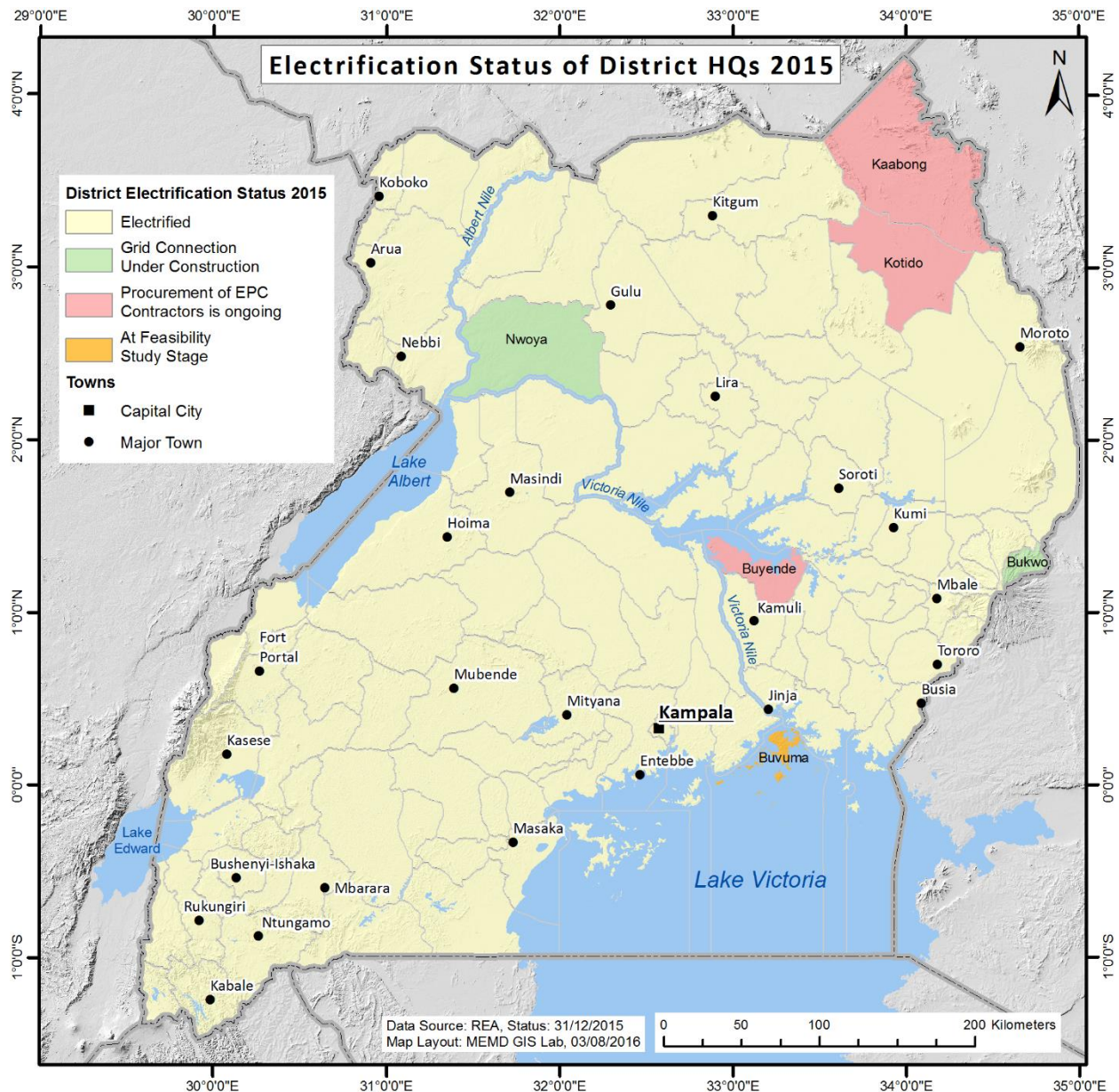


Fig 19: Map showing the rural electrification status as at 2015

Table 4: List of the completed Rural Electrification extension projects as at the end of 2015

Completed Projects - 2015					
No.	Scheme Name	District	MV R/L, KM	LV R/L, KM	Contractor
1	Kaliro - Kaliro Sugar Factory	Kaliro	7.70	1.80	C & G Andijes Group Ltd
2	Muwafu TC in Mulanda sub-county	Tororo	6.00	6.90	Utility Services
3	Busiu TC - Kidok Health center	Mbale	13.00	8.00	
4	Buwaya TC and Environs	Manafa	2.50	1.90	
5	Buluganya, Buyaga - Bunalwere and Kaduwa	Sironko, Bulambuli	24.00	19.00	
6	Maizimasa sub - county, Doho and Bugosa TC	Butaleja	5.80	10.50	
7	National High Altitude Center at Teryet	Kapchorwa	10.30	6.30	
8	Kabwangasi Parish, Kakutu and Kagumu sub-county	Pallisa, Kibuku	12.00	14.20	
9	Pajwenda - Phase II	Tororo	0.10	3.00	
10	Kaduwa TC	Sironko	0.10	3.00	
11	Kumi Orthopaedic Hospital & Grace High School in Aloit	Kumi / Bukedea	0.70	2.70	
12	Ogur Health center and Apii Pe Village	Lira	0.30	3.50	
13	Kisindi - Masindi Farm Inputs care center	Masindi	6.00	2.20	
14	Rukondwa Village	Masindi	1.00	3.30	
15	Kafu TC and Kafu Farm	Nakasongola	21.00	7.70	
16	Bujwahiya and Bulyango Villages - Additional areas	Hoima	0.30	2.80	
17	Ziwa Rhino Ranch	Nakasongola			
18	Kyamukama TC and Environs	Nakasongola	0.40	0.90	
19	Kasozi PS and Environs	Nakasongola	6.90	3.70	

20	Kitwe Farm and Environs	Ntungamo	3.40	3.41	A2Z
21	Nyakibobo - Itojo sub-county	Ntungamo	2.20	1.30	
22	Nyabushabi - Muyumbu	Kabale	4.50	8.50	
23	Bunyonyi Wildlife Island	Kabale	1.40	2.70	
24	Rubaaya to Bigaaga	Kabale	6.00	6.80	
25	Kicumbi TC and Environs	Kabale	0.82	3.50	
26	Garubunda to Mabanga TC and Nyaruzinga to Kashenyi TC & Kafunjo TC	Rukungiri	27.00	22.00	
27	Mburameizi barracks and Kiruruma water pump	Kanungu	2.60	1.50	
28	Mpangango TC and Environs	Kanungu	3.60	2.05	
29	Rukungiri Primary Teachers College	Rukungiri	1.60	0.20	
30	Bwindi Community Hospital and Environs	Kanungu	16.20	6.50	A2Z
31	Kitonda TC	Ntungamo	0.05	4.62	
32	Omubutunda TC	Ntungamo	0.20	7.25	
33	Jesus Cares School and Environs	Ntungamo	2.10	4.00	
34	Kalagala TC	Lyantonde	0.15	3.14	
35	Kasambya TC	Lyantonde	1.43	3.49	
36	St. Francisca Health center II in Makongye Village in Rubaya S/C	Mbarara	0.96	1.40	
37	Rwenshanku and Rugongi Villages	Mbarara	3.70	5.55	Nishizawa / Ferdsult Engineering Services Ltd
38	Mayuge - Namaingo - Lumino - HV WORKS Component	Mayuge, Busia, Namayingo, Bugiri & Iganga	134.40	-	
39	Kagando Interconnection Line	Kasese	4.00	1.00	Precise Electricals Ltd

2.3.6 West Nile Grid Extension Project

The grid extension works were finished on 30th November 2015 and the extended grid is to be handed over to WENRECo. MEMD is in the process of concluding consultations with stakeholders on the revision of the existing Lease Agreement with WERENCo in order to incorporate the extended grid.

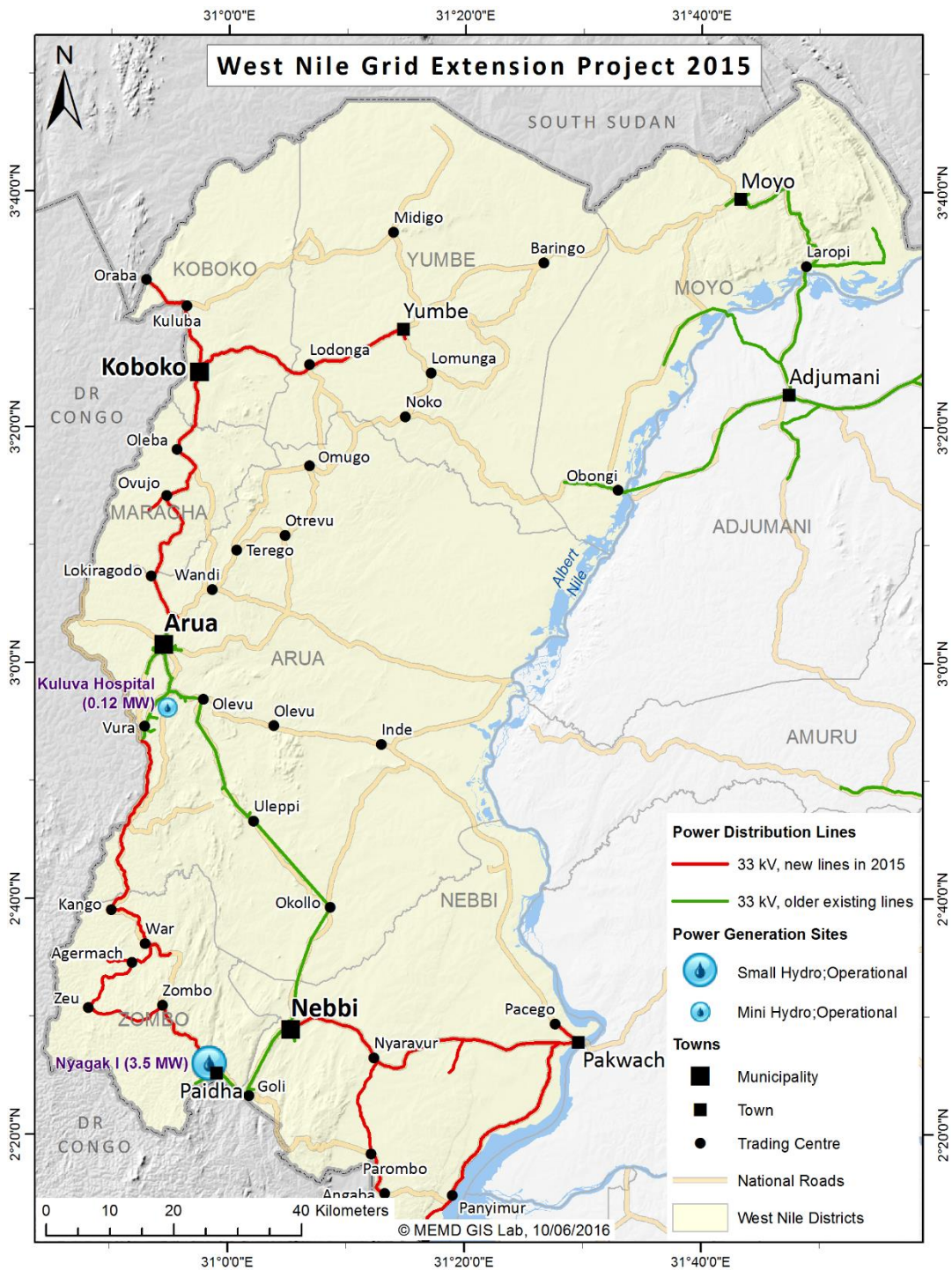


Fig 20: Map of Uganda showing electrification status of West Nile

2.3.7 Energy for Rural Transformation (ERT) II Programme

The purpose of the ERT program is to develop Uganda's energy and information/communication technologies (ICT) sectors, so that they make a significant contribution to bringing about rural transformation, i.e., these sectors facilitate a significant improvement in the productivity of enterprises as well as the quality of life of households.

Main Outputs

Outputs were realised in three activities: (i) On-grid household connections (ii) Energy Efficiency and Savings in Industry, provision of computers for improved service delivery and (iii) Solar Energy Packages for Social Services.

Household Connections

- **On-grid connections** - The ERT II revised target after approval of additional financing is 120,000 on-grid household connections. During 2015, a total of 77,632 connections were achieved under the OBA program and UEDCL. The Project cumulative connections as of December 2015 are 99,486 on-grid connections. The OBA connections are carried out by WENRECO, PACMECS, BECS, FESL, KIL and Umeme.
- **Off-grid connections** – The project target is 20,000 solar home systems and 1,000 non-government institutions like churches and commercial establishments. Verification of installed systems is in process to confirm completed installations.

Farm/Agri-business connections

- The ERT II target is 9 large agri-business/farms with access to electricity to support the process of transforming agriculture from largely subsistence to commercial through electrification.
By December 2015, line extension construction works for all 9 farms was completed and commissioned.

Energy Efficiency

- The target is to save 10MVA of power in high consuming industries through financing installations of power-factor correction equipment.
In 2015, this intervention realised savings of about 2.0 MVA making the cumulative audited and verified total of approximately 9.03 MVA from 26 industries.

Information and Communications Technology

- **Health Centres:** The target is to provide computers with internet connectivity in 30 health centers to improve service delivery. In 2015, computers were installed in 11 health centers thus meeting the target.

Solar Energy Packages for Social Services

The performance on target installations for social services is in Table 5 below.

Table 5: Installations of Energy Packages by Sector

Sector	Target Installations No.	January – December 2015 Installations No.	Completed Installations No.	Comments
Health	676	3	665	Target of 676 health centres: 540 health centres funded by IDA & GEF and 136 health centres funded by the Nordic Development Fund (NDF). These are spread in 31 districts.
Education	560	0	508	Partially installed solar systems to be completed by end of June 2016. Contractor is carrying out routine year two maintenance. Completed systems are located in about 80 districts.
Water	33	0	33	Target of 33 water-pumping stations: 29 funded by IDA and 4 funded by NDF. All installations were completed in the 16 districts by March 2014. Commissioning and handover to operators and local authorities was done.
Local Government	6	5	6	Installations at all the targeted 6 sub-county headquarters and 30 Primary Schools are completed.

Source: ERT II Quarterly Performance Reports, 2015

2.4 Renewable Energy Promotion

2.4.1 Wind Energy Resources

Two (2) wind measuring equipment were installed at Napak and Kotido District headquarters to assess the wind potential of the region and data is progressively being collected to generate a wind map.



Fig. 21: A set of two wind measuring equipment installed at Napak and Kotido District headquarters

2.4.2 Solar Energy

The Ministry has continued to spearhead the formation of strong vibrant solar energy associations in order to address various challenges in the sub sector. These include poor quality services and products on the market, lack of data on the systems and business, and limited technical capacity building in the sub sector. The various stakeholders across the country have been mobilized and the formation of the associations is in their final stages.

2.4.3 Biogas Technology

The ministry together with the Uganda Domestic Biogas Program (UDBP), commissioned a total of 10,000 household biogas systems (domestic units) and 20 bio latrines. A second phase of the project is underway which will be implemented over a 4-year period. The second phase has set a target of 13,600 biogas units. The Ministry completed the construction of ten (10) demonstration household biogas systems under the Modern Bio mass project for rural development in Kampala Capital City Authority in four divisions to demonstrate urban farmer management of animal waste by generation of bio gas for cooking.

2.4.4 Development of National Biogas Standards

The Ministry in partnership with Uganda National Bureau of Standards (UNBS) initiated the process of developing national standards for domestic biogas. Six (6) draft standards covering different aspects of the biogas technology were developed through a highly consultative process. These draft standards are awaiting further discussion and input by key stakeholders and industry players as well as gazettelement by UNBS.

2.4.5 Construction of Bio Latrine Systems in Schools

The Ministry completed the construction of ten (10) bio latrine systems in ten schools under the Modern Bio mass project for rural development. This was to demonstrate the management of human wastes by generating bio gas from the systems to partly substitute the fire wood for cooking especially of light meals, lighting as well as provide a clean renewable gas for use in laboratories during experiments. The ten (10) beneficiary schools are: Asinge Senior Secondary School in Tororo district; Hamdan Girls' Senior Secondary School in Mbale district; St. Paul's Senior Secondary School in Mbale district; Teso College Aloet – Eastern Campus in Soroti district; Kitagobwa Senior Secondary School in Butambala district; Riness Senior School in Wakiso district; St. Thereza Girls' Primary School in Wakiso district; Mbarara High School in Mbarara district; and Ntare School in Mbarara district.



Fig. 22: Launch of Bio latrine system at St. Thereza Girls' Primary School, Entebbe in Wakiso district

2.4.6 Promotion of Gasification

The Ministry carried out servicing and repairs on the 82.5 kVA gasfier at Nyabyeya Forestry College under the Modern Bio mass project for rural development. A mini power evacuation line has been set from the gasfier house to the generator house to evacuate power for the college to utilize the power from the bio mass.

2.4.7 Promotion of Briquetting Technology

The Ministry supplied four small scale briquetting units and trained four communities in Jinja on the use of small scale briquetting units under the Modern Bio mass project for rural development. This was after the Ministry identified Jinja Municipality as a community with limited and scarce fire wood and charcoal while there was high accumulation of garbage from the homes and market places. Seventy four (74) trainees had their capacity built in making of carbonized briquettes. The beneficiary groups included:

- a) Tweisaniye group, Kyabazinga market, Bugembe town council
- b) Tisonde Community Development association, Katwe Village, Bugembe town council
- c) Gavamukulya Group, Bugembe, Kakira town council
- d) EMC Uganda Youth group, Wairaka town council

2.4.8 Promotion of Institutional Saving Cookstoves in Educational Institutions

Construction of 24 Improved cook stove systems (twin size: 200 litres and 100 litres) was completed in 24 selected educational institutions in the country. These units will demonstrate the efficacy of the new technology among schools in their respective areas. As a result of these demonstrations, some schools such as Jinja Secondary School have already replaced all their old inefficient cooking systems with the new stove technology.

2.4.9 Development of Green Schools NAMA (Nationally Appropriate Mitigation Actions)

Promotion of the use of efficient institutional stoves in Educational Institutions was prioritized as a flagship NAMA in the energy sector and in Uganda as a whole. The NAMA is being upgraded to include other sustainable energy solutions and is expected to attract funding from the Green Climate Fund and other climate financing instruments.

2.4.10 Development of a Standardized Baseline on Improved Institutional Cookstoves

A standardized baseline (SBL) for improved institutional cook stoves was developed for Uganda. The baseline will help lower the initial investment costs for CDM project developers whose projects are focused on institutional cook stoves and also provide vital information required during the implementation of the Green Schools NAMA.

2.4.11 The Green Charcoal Project

a. National Charcoal Survey initiated: The process for the nation-wide survey of the charcoal industry to assess charcoal consumption/usage, production efficiencies of different kiln types and volume of charcoal produced/consumed per district was started. RebelGroup International was contracted by UNDP to undertake the survey on behalf of the Ministry. By end of 2015, data collection was complete and analysis was on-going.

b. Awareness on charcoal technologies: Educational campaigns were conducted both within the pilot districts and nationally through print and electronic media once every quarter for different stakeholders within the charcoal sub sector (landowners, producers, traders, regulators and

users). The messages focused on sustainable charcoal processes, guidelines and policy/legal provisions. Each district broadcasted one radio talk show on a monthly basis.

c. Networking with regional partners: The Project Management team participated during a regional conference on biomass, research and policy held in Nairobi in May 2015. The forum enabled dissemination of the Green Charcoal Project results with other stakeholders and generated lessons/ best practices that have been replicated here in Uganda.

d. Equipment for feedstock inventory: Equipment worth USD \$50,000 was procured and handed over to the National Forestry Authority (NFA) in July 2015. This support enhanced the capacity of NFA in conducting tree inventory and monitor biomass growth, mapping and other related assessments to guide planning and decision making for the industry.

e. Equipment for sustainable charcoal studies: With support from UNDP, a laboratory unit was set up and equipment procured and handed over to Nyabyeya Forestry College in Masindi to support further training and research in the charcoal industry. Key among the equipment included; the Bomb Calorimeter (measures Calorific Values), Laboratory Emissions Equipment (measures emissions from stoves/kilns) and Gas chromatograph, among others.

f. Capacity building for District Officials: A one week training was held at Nyabyeya Forestry College for 40 district officials and other stakeholders on biomass monitoring and sustainable woodland management for reliable feed stock supplies. The intervention enhanced the capacity of the officials in planning for the industry.

g. District Charcoal Action Plans developed: Each district was supported to develop the District Charcoal Action Plan (DCAP) that was passed by the respective Councils and integrated into the District Development Plans (DDP). The action plans are being used for prioritization of the charcoal industry and mobilizing resources.

h. Stakeholder sensitization and engagement: With support from UNDP, a consultancy firm (Goodfire/Fideli) consortium was hired in September 2015. The firm reached out to most of the stakeholders involving; land owners, producers, vendors and transporters in Kiboga, Kiryandongo, Mubende, Nakaseke and Kampala. The initiative generated concerns from the actors and presented them with alternatives for improvement. It eventually led to the formation and training of 20 charcoal associations (over 300 participants) in the districts.

i. Briquetting making groups supported: Through the consultancy handled by JNR Consult, the project identified 12 briquette making groups in the four pilot districts. The groups with members of about 20 each was trained and supported with full briquette equipment worth UGX 15 million each.

j. Communication Strategy developed: The Ministry hired a communication consultant in September 2015. The consultant steered the process for developing the communication strategy for the Green Charcoal Project and promoting NBEST outcomes.

k. Establishment of charcoal woodlots: About 1,000 individuals comprising of land owners, charcoal groups, women associations, youths and other relevant stakeholders were identified, and trained on Sustainable Forestry Management practices including; tree nursery management, woodlot establishment/management, enrichment planting and Farmer Managed Natural Regeneration (FMNR). The initiative led to the raising and planting of over 1.5 million trees (over 1,000 ha of charcoal feedstock) in the four pilot districts on private land. In the Central Forest Reserves, the National Forestry Authority also raised and established about 100 ha of dedicated biomass plantations for charcoal feedstock.

l. Enhancing Sustainable Land Management: The project worked with 16 Community Based Farmers' Groups in the four districts to implement Conservation Agriculture (CA) technologies involving 100 households. Eight groups received Small Grants of USD \$10,000 each while the other eight adopted lessons from the grantees. The intervention led to an increase in the number of households registering decrease in land degradation and increase in crop yield by over 30%.

2.5 Promotion and Coordination of Peaceful Applications of Atomic Energy

2.5.1 Nuclear Power Infrastructure Development

The Cabinet approved the Nuclear Power Roadmap Development Strategy on 22 April 2015. The strategy identifies key infrastructure issues for nuclear power development and proposes mechanisms to address them. As part of strategy implementation, the following studies are being conducted with technical support from the International Atomic Energy Agency (IAEA):- site surveys, energy planning, financial and technology assessment, human resource needs assessment, and policy, legal and institutional review.

2.5.2 Survey of Potential Sites for Nuclear Power Development

Site survey was conducted by the Siting Working Group (SWG) which comprises of experts from different MDAs. In a workshop held from 27th to 28th October 2015 the Siting Working Group reviewed the Site Survey report and made recommendations for ground follow-up. Mr. Godfrey Ndawula, Commissioner New and Renewable Energy Department represented the Permanent Secretary/ MEMD during the workshop opening ceremony. A final Site Survey report was prepared and it was recommended that ground follow-up is initiated starting with studies in the Kyoga region.



Fig. 23: Participants for the Workshop to Review of the Site Survey Report

2.5.3 Review of Policy, Legal and Institutional Framework Relevant to Nuclear Energy Development

In order to strengthen nuclear safety infrastructure, gaps in the existing policy, legal and institutional framework relevant to nuclear energy development in Uganda need to be identified. Expressions of interest to review policy, legal and institutional framework relevant to nuclear power development were received and evaluated. Requests for proposals from the shortlisted firms was issued. The proposals were evaluated and the report was submitted for consideration to the contracts committee.

2.5.4 Sustainable Development of Nuclear Fuel Resources

One of the functions of NEU as provided for by the Atomic Energy Act, 2008, is to develop a programme for sustainable supply of nuclear fuel. The Unit is currently conducting studies to identify options for sustainable supply of nuclear fuel for the planned nuclear power plants and supporting uranium exploration and evaluation.

2.5.5 Technical Support to Uranium Exploration and Evaluation

The Nuclear Energy Unit continued to coordinate the IAEA Technical Cooperation Project: UGA2002: Strengthening National Capacity for Uranium Exploration and Evaluation. The project provides technical support to the Directorate of Geological Surveys and Mines (DGSM) to conduct the on-going Uranium exploration and evaluation. The following activities were executed under the project:-

i) Exploration equipment including four (4) GPS, two (2) Spectrometers, two (2) Holux Bluetooth GPS, two (2) Cs-137 Stabilization buttons and Ten (10) Electronic Personal Dosimeters (EPDs) were received from IAEA and dispatched to DGSM.

ii) A workshop on “Legal, Policy and Regulatory requirements for uranium exploration and mining” was conducted from 23rd to 27th February 2015.

2.5.6 Strengthening Management of Radioactive Waste

a) Study on the Current Status of Radioactive Waste Management in Uganda

A study on the status of radioactive waste management was concluded in the reporting period. The purpose of the study was to provide a situation analysis of radioactive waste management in the country and guide formulation of national policy and strategies on radioactive waste.

b) Interregional Workshop on Good Practices on NORM Residues and Radioactive Waste Management

One Ministry official participated in the “Interregional Workshop on Good Practices on NORM Residues and Radioactive Waste Management”, organised by the IAEA and hosted by Malaysia from 19th – 23rd October 2015. The main objective of the workshop was to promote safe and efficient clean up of radioactively contaminated facilities and sites. One of the key recommendations was that member states should expedite the development of a strategy for NORM (Naturally Occurring Radioactive Material) waste management.

2.5.7 Technical Support to Applications of Nuclear Energy in Health, Industry and Research

2.5.7.1 Establishment of Radiotherapy and Nuclear Medicine Facility at Uganda Cancer Institute

NEU through the National Liaison Office coordinates IAEA technical Cooperation activities in Uganda Cancer Institute. Through this initiative the IAEA and Government of Uganda on a cost sharing basis have made available funds to procure a new Cobalt-60 Teletherapy Machine for cancer treatment. However, the delivery of the Machine awaits completion of the construction of the radiotherapy bunker to house the machine. By January 2015 a competent firm had been identified to provide consultancy services to undertake feasibility study, production of detailed designs, tender documents and construction supervision of radiotherapy bunkers. By December 2015 final designs for the bunker were ready and the procurement process for the contractor to build the facility was initiated.

2.5.7.2 Hosting the Deputy Director General (DDG), IAEA Technical Cooperation

Uganda receives technical assistance from IAEA on the peaceful use of atomic energy through the Technical Cooperation Programme. To further enhance this partnership, Mr. Kwaku Aning, the Deputy Director General/ Head Technical Cooperation Department at the International Atomic Energy Agency (IAEA) visited Uganda from 17th – 21st May 2015. The objectives of The Deputy Director General’s duty mission were:

i. to hold consultations with Government authorities on strategic and programmatic issues related to the cooperation between Uganda and the IAEA,

- ii. discuss the prefeasibility project for the Nuclear Power Plant in Uganda,
- iii. participate at the commissioning of Cancer Research and Outpatient Building,
- iv. Visit the Ebola Programme at the Uganda Virus Research Institute, Entebbe.

During the visit, Mr. Kwaku held consultative meetings on IAEA technical cooperation with the Rt. Hon. Dr. Ruhakana Rugunda, the Prime Minister of Uganda; Hon. Peter Lokeris, the Minister of State for Mineral Development also holding the Portfolio of the Minister of Energy and Mineral Development; Hon. Sarah Achieng Opendi, the State Health Minister for Primary Care also holding the portfolio of Minister of Health. The DDG visited the Uganda Virus Research Institute (UVRI), and met with the Ebola virus disease programme team. Figures 24-25 are some of the pictures taken during the visit.

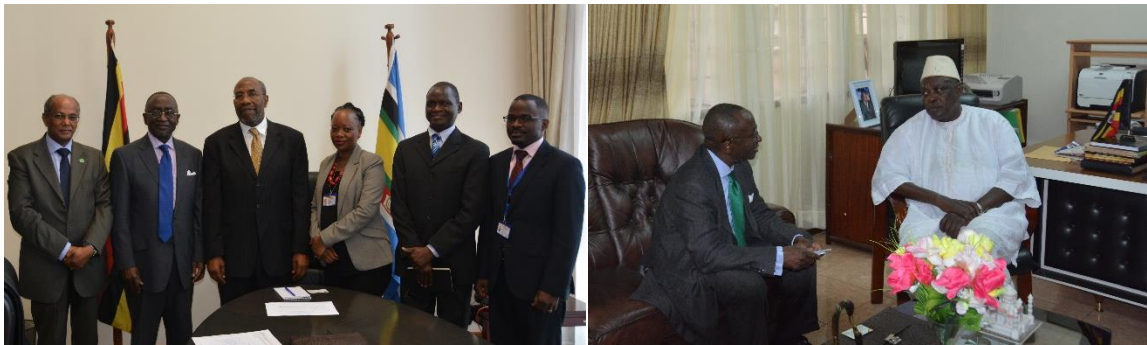


Fig. 24: Meeting the Prime Minister (left) and Hon. Peter Lokeris (Right)



Fig. 25: Hon. Sarah Achieng Opendi the State Health Minister for Primary Care and the Deputy Director General IAEA, Mr. Kwaku Aning during a Consultative meeting at Ministry of Health.

2.5.7.3 The 26th Technical Working Group Meeting (TWGM) of AFRA

African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology, (AFRA) is an inter-governmental agreement among countries in the Africa region which was established in February 1990 to promote cooperation among the Member States and with the International Atomic Energy Agency (IAEA) in the peaceful applications of nuclear science and technology. The 26th Technical Working Group Meeting (TWGM) of AFRA comprising of AFRA National Coordinators was hosted by the Kingdom of Morocco from 20th to 24th July 2015. The meeting among others, encouraged member states to honour their legal and financial commitments by:

- a) acceding to the 5th AFRA Extension Agreement which came into force on 5th April 2015 for a period of five years until 3 April 2020, and
- b) ensuring timely payment of the national contributions to the AFRA Funds.

2.5.7.4 The 59th Annual Regular Session of the IAEA General Conference

The 59th Annual Regular Session of the IAEA General Conference was held in Vienna, Austria from 14th - 18th September 2015. The Head of Mission to the IAEA, Ambassador Marcel R. Tibaleka led the Ugandan Delegation comprised of twelve (12) officials from Ministry of Energy and Mineral Development (MEMD), Ministry of Water and Environment, National Planning Authority (NPA), Atomic Energy Council (AEC), Uganda Cancer Institute (UCI) and Uganda National Bureau of Standards (UNBS). The purpose of participation was to strengthen international cooperation on nuclear energy development and enhance the efficiency and effectiveness for implementing IAEA Technical Cooperation (TC) Programme. During the conference, the review of five (5) new TC projects for the cycle 2016/17 was concluded and work plans for the cycle 2014/15 were updated. Also draft designs for the radiotherapy bunker at Uganda Cancer Institute (UCI) were conditionally cleared with a recommendation to undertake geotec studies on the site.

2.5.7.5 Promoting the Sustainability and Networking of National Nuclear Institutions for Development (RAF/0/042)

A regional training course on “Enhancing Capacity for Diagnosis of Ebola Virus Disease (EVD) by molecular methods” was hosted by Uganda from 7-11 December 2015. The lead counterpart institutions for this event were Uganda Virus Research Institute (UVRI) and Ministry of Agriculture Animal Industry and Fisheries (MAAIF). Ten (10) African States participating in the project. The Ministry supported administrative arrangements for the experts from other Member States.

2.5.7.6 IAEA Technical Cooperation Cycle 2016/17

Pre-planning consultations were conducted and led to the preparation of the Country Programme Note (CPN), consisting of the country programme overview and eight prioritized national project concepts. The Nuclear Energy Unit provided support to the project counterparts to finalize project designs, and at its meeting on 26th November 2015 the IAEA Board of Governors approved five (5) new National Projects for the Technical Cooperation programme for 2016-2017.

2.5.7.7 Expert Missions, Technical Meetings, Fellowships and Scientific visits

A total of eighteen (18) expert missions; GSMD (4), Makerere University (3), MAAIF (2) and health (9) were received in Uganda. Four (4) scientific visits: UNBS (1), MAAIF (3) and Nine (9) Fellowships: MAAIF (4), AEC (1), Health (2), UNBS (2) were coordinated.

2.5.7.8 Directory on Nuclear Technology Services in Uganda

A Directory on 'Nuclear Technology Services in Uganda' is under development with focus on:

- i) Creating awareness on the different nuclear technology services in the country.
- ii) Providing up-to-date information on where the different services can be obtained.
- iii) Improving the coordination role of the Ministry in the Nuclear Energy Sub-sector.

Procurement of the services to design and produce the directory is ongoing and the draft directory is under review.

2.5.7.9 Information Booklet on IAEA Technical Cooperation Programme 2014 - 2018

An Information booklet on IAEA Activities in Uganda is under development. The booklet shows the IAEA contribution to Uganda and details the Coordination activities between Ministry of Energy and Mineral Development, IAEA and Other Government institutions involved in the technical cooperation programme.

2.6 Atomic Energy Council (AEC) Activities

During the year, the Atomic Energy Council (AEC) received and assessed one hundred and six (106) notifications from thirty two (32) facilities; received and assessed One hundred seventy two (172) application forms from One hundred fifty eight (158) facilities. The Council carried out One hundred and five (105) local and eighty (80) up-country inspections in One hundred and five (105) and 80 facilities respectively, carried out enforcement in thirty two (32) facilities, issued eight hundred fifty (850) Thermo Luminescent Dosimeters (TLDs) to fifty seven (57) facilities, Issued One hundred and three (103) licenses, thirty (30) permits and twenty seven (27) international trainings, workshops and meetings were attended by staff. Thirteen (13) facilities were visited for registration purposes and all were found to be utilising ionising radiations and these were entered/ registered in the Regulatory Authority Information System (RAIS) and Regulatory Authority Software Database (RASOD) databases. The updated inventory of radiation sources now stands at 121 for Radioactive Material and 522 for Radiation Generators.

UGANDA ENERGY BALANCE 2015

Unit:ktoe	Liquefied Petroleum Gases	Motor Gasoline (Petrol)	Aviation Gasoline	Kerosene	Gas/Diesel Oil	Fuel Oil	Lubricants	Bitumen	Fuelwood, Residues and Bagasse	Charcoal	Hydro	Solar Photovoltaics	Electricity	Total of All Energy Sources
Production									16,625.11		265.83	0.34		17,066.25
Imports	6.78	597.08	109.14	51.26	728.08	44.17	17.05	2.79					4.13	1,560.48
Exports													-10.41	-10.41
Total Primary Energy Supply (TPES)	6.78	597.08	109.14	51.26	728.08	44.17	17.05	2.79	16,625.11		265.83	0.34	-6.28	18,616.33
Statistical differences														
Transformation Processes					-1.03	-17.28			-328.47	1,976.68	-265.83	-0.34	303.41	1,492.16
Main activity producer electricity plants					-1.03	-17.28					-257.48		264.28	-11.52
Autoproducer electricity plants									-328.47		-8.34	-0.34	39.13	-298.03
Charcoal production plants										1,976.68				1,801.71
Energy Industry Own Use														-19.01
Own use in electricity plants													-19.01	-19.01
Losses									-4,743.91	-652.52			-62.09	-5,458.51
Final Consumption	6.78	597.08	109.14	51.26	727.04	26.88	17.05	2.79	11,552.74	1,324.16			216.03	14,630.97
Industry		59.92		40.80	218.22	26.88			2,449.37				135.97	2,931.16
Non-specified (industry)		59.92		40.80	218.22	26.88			2,449.37				135.97	2,931.16
Transport		477.23	109.14		436.43									1,022.81
Road		447.27			407.48									854.75
Domestic aviation			109.14											109.14
Rail					28.96									28.96
Water Transport		29.96												29.96
Other	6.78	59.92		10.46	72.39				9,103.37	1,324.16			80.07	10,657.15
Residential	4.52			10.46	36.20				8,254.00	1,103.47				9,461.02
Commercial and public services	2.26				36.20				196.01	220.69				482.68
Street Lighting													0.17	
Agriculture/forestry		29.96												29.96
Fishing		29.96												29.96
Non-specified (other)									653.36					653.53
Non-Energy Use							17.05	2.79						19.85
Non-energy use industry								3.01						3.01
Non-energy use in transport								9.03	2.79					11.82
Non-energy use in other								5.02						5.02
Electricity Output in GWh					1.00	78.00			354.00		3,091.00		4.00	3,528.00
Elec output-main activity producer electricity plants					1.00	78.00					2,994.00			3,073.00
Elec output-autoproducer electricity plants									354.00		97.00		4.00	455.00
Efficiencies for Electricity Plants														
Main activity producer electricity plants					8.32%	38.81%					100.00%			
Autoproducer electricity plants									9.27%		100.00%	100.00%		
Household Grid Connection Rate	24.56%													
Energy Consumption per Capita (KgoE/Capita)	410.13													
Electricity Consumption per Capita (kWh/capita)	70.40													
Electrified Households (Including Solar)	843205.00													
Electrified Households (Main and Off-Grid)-Yr 2015	797205.00													
Electrified Households (Main and Off-Grid)-Yr 2014	640025.00													
			Final Consumption	Electricity					Primary Energy Supply (TPES)					
			Residential	24.24%					Biomass	89.30%				
			Commercial	12.74%					Oil Products	8.36%				
			Industrial	62.94%					Electricity	1.40%				
			Street Lighting	0.08%					Total	100.00%				
			Total	100.00%										

3.0 PETROLEUM SUB SECTOR

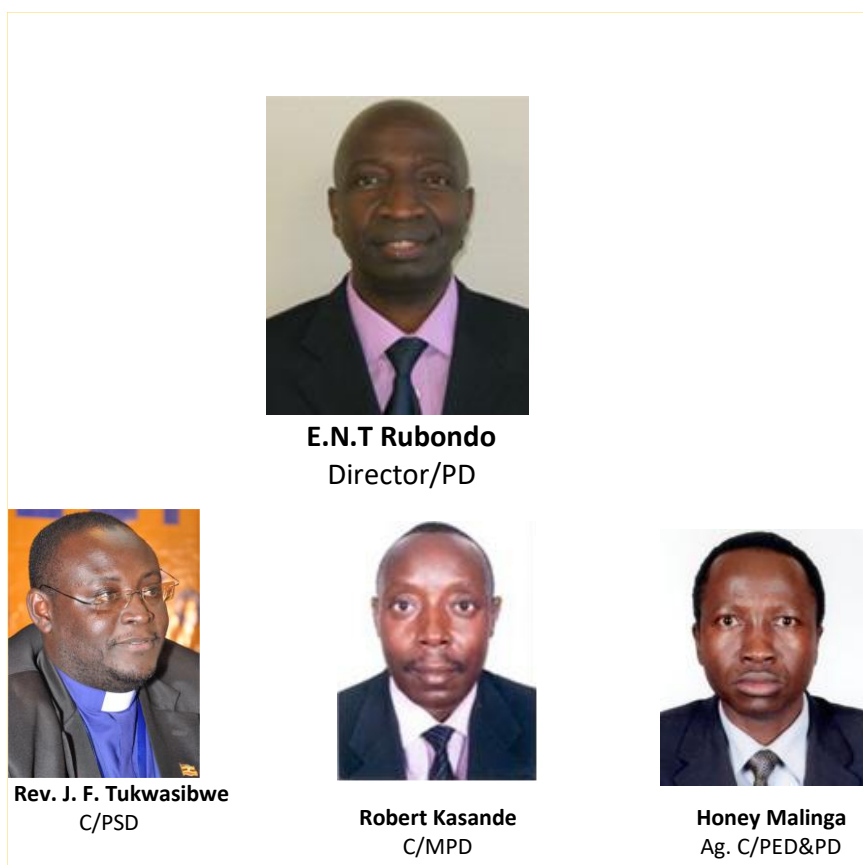


Fig. 26: Top Management of the Petroleum Directorate

3.1 Petroleum Exploration, Development and Production

The Petroleum Exploration, Development and Production Department (PEDPD) in the Ministry of Energy and Mineral Development (MEMD) is responsible for ensuring the establishment of the full petroleum potential of the country and promote its sustainable exploitation. This section outlines the activities undertaken by the department during 2015 under the following functions:-

- Promotion of the country's petroleum potential;
- Initiate Policy, legislation formulation and implementation in the Upstream sub-sector;
- Institutional Development and Capacity building in the petroleum sub-sector;
- Monitoring work of the licensed oil companies undertaking exploration and development in the country;

- Communicating for the oil and gas sector; and,
- Regional activities in the Petroleum Sector especially the 7th East African Petroleum Conference and Exhibition (EAPCE'15) and sectoral council meetings.

3.1.1 Promotion of the Country's Petroleum Potential and Licensing

3.1.1.1 Promoting Investment in the Oil and Gas Sector

The international oil industry continued to show significant interest in participating in the country's emerging oil and gas sector. The Department presented the status of the oil and gas sector and investment opportunities in both the Upstream and Midstream petroleum sub-sectors and provided promotional materials to these companies. Key areas of interest were the 1st licensing round and development of petroleum infrastructure. During the year, expressions of interest to participate in the different aspects of Uganda's oil and gas sector were received from the following companies.

Table 6: Companies that expressed interest in participating in Uganda's Oil and Gas Sector during 2015

	COMPANY/ COUNTRY OF ORIGIN	AREA OF INTEREST
1	ORANTO Petroleum Ltd from Nigeria	Participating in the upcoming Licensing rounds
2	Atlas Petroleum International Ltd from Nigeria	Participating in the upcoming Licensing rounds
3	EA Hydrocarbons from Uganda	Participating in the upcoming Licensing rounds
4	Zebra Data Sciences from United Kingdom	Participating in the upcoming Licensing rounds
5	Armour Energy Limited from Australia	Participating in the upcoming Licensing rounds
6	IHS Global SA from Switzerland	Developments in Uganda's Oil and Gas Sector
7	Wood Mackenzie from United Kingdom	Research on Uganda's oil and gas sector
8	International Finance Corporation	Financing of infrastructure projects for the oil and gas sector
9	Siemens Pty Limited	Development of oil and gas infrastructure
10	Best Safari Tour and Business Services Limited	Investment opportunities in the oil and gas sector
11	Oil and Gas Resources (U) Ltd	Investment opportunities in the oil and gas sector
12	FBW Architects and Engineers	Investment opportunities in the oil and gas sector
13	KPMG	Investment opportunities in the oil and gas sector
14	Texas County Exploration Corporation, United States of America	Exploration licensing for both conventional and non-conventional resources
15	Petroleum Development Consultants, United Kingdom	Advisory services to Government in areas of Policy, Fiscal and PSA terms
16	New African Global Energy LTD, United Kingdom	Exploration blocks earmarked for the upcoming bidding round
17	CMI Capital, United Kingdom	Bidding for the Ngassa discovery
18	PETOIL, Turkey	Purchase of geological and geophysical data.
19	Mitsui & Co. Ltd, Japan	Investment opportunities in the oil sector in Uganda
20	McAlester Energy Resources, United States of America	Waste Management
21	BNP Paribas, France	Financing IOCs and NOC activities
22	Stanbic Bank, Uganda	Oil and Gas Infrastructure Development in the EAC region.
23	Kuanta Construction, TURKEY	Opportunities in both Midstream and Upstream operations.
24	China Machinery Engineering Corporation, China	Development of both midstream and upstream infrastructure
25	Anhui Construction Engineering, China	Development of both midstream and upstream infrastructure

3.1.1.2 First Licensing Round for Petroleum Exploration in Uganda

a. Announcement of the 1ST Licensing Round

In line with the Petroleum Exploration, Development and Production Act 2013, Cabinet approved the first licensing round for Petroleum Exploration in Uganda during January 2015 and a report was presented to Parliament. Subsequently, the first competitive licensing round was announced by the Minister of Energy and Mineral Development on 24th February 2015. This licensing round covers six areas in the Albertine Graben which already have substantial data coverage. The six blocks are; Ngassa (410 Km²) in Hoima District, Taitai & Karuka (565 Km²) in Buliisa District, Ngaji (895 Km²) in Rukungiri & Kanungu Districts, Mvule (344 Km²) in Moyo and Yumbe Districts together with Turaco (425 Km²) and Kanywataba (344 Km²) in Ntoroko District.

The main objectives of implementing the licensing round are:

- a. To attract additional investment in the country's oil and gas sector;
- b. Expand the country's resource base which stands currently at 6.5 Billion barrels of oil in place and thus increase the revenue base;
- c. Enhance the country's sustainability of oil and gas production; and
- d. Respond to the numerous investors who have expressed interest in investing in the country's oil and gas industry.

Following the announcement, the Ministry issued a Notice of Request for Qualification (RFQ) in the media, inviting interested firms and/or consortia to submit Applications for Qualifications (AFQ) within a period of not more than 3 months.

b. Promotional Activities in Support of the 1st Licensing Round

Oil and Gas International Licensing Summit, London

Mr. Honey Malinga, Acting Commissioner, Mr. Frank Mugisha, Principal Geophysicist and Isaac Kabuye, Legal Officer participated in the Oil and Gas International Licensing Summit from 20th to 21st January, 2015 organised by International Research Networks and held in London with the objective of promoting the country's petroleum potential.

Promotional Roadshow for the First Licensing Round

This Ministry of Energy and Mineral Development hosted an international roadshow to promote Uganda's 1st licensing round for petroleum exploration on 17th June 2015 at Montcalm Shoreditch London Tech City Hotel in London, United Kingdom. The roadshow was jointly organized by the Ministry and Schlumberger Eastern Oilfield Limited. The roadshow, which also featured an exhibition, attracted a total number of 80 participants from international oil and gas companies and service companies. The purpose of the roadshow was to provide a dedicated forum for Government officials to deliver detailed presentations on the blocks that were on offer, display the potential of the areas through an exhibition booth and also organise meetings with prospective investors. Government of Uganda's delegation was led by Hon. Eng. Irene Muloni, Minister of Energy and Mineral Development and comprised of the following technical officers from the Directorate of Petroleum and Ministry of Justice and Constitutional Affairs.

- Mr. Ernest N.T Rubondo, Director- Petroleum;
- Ms. Elizabeth Nakkungu, Commissioner, Legal Advisory Services;
- Mr. Frank Mugisha, Ag. Assistant Commissioner;
- Ms. Gloria Sebikari, Senior Communications Officer;

- Mr. Nurudin Njabire, Geologist; and
- Mr. Isaac Kabuye, Legal Officer

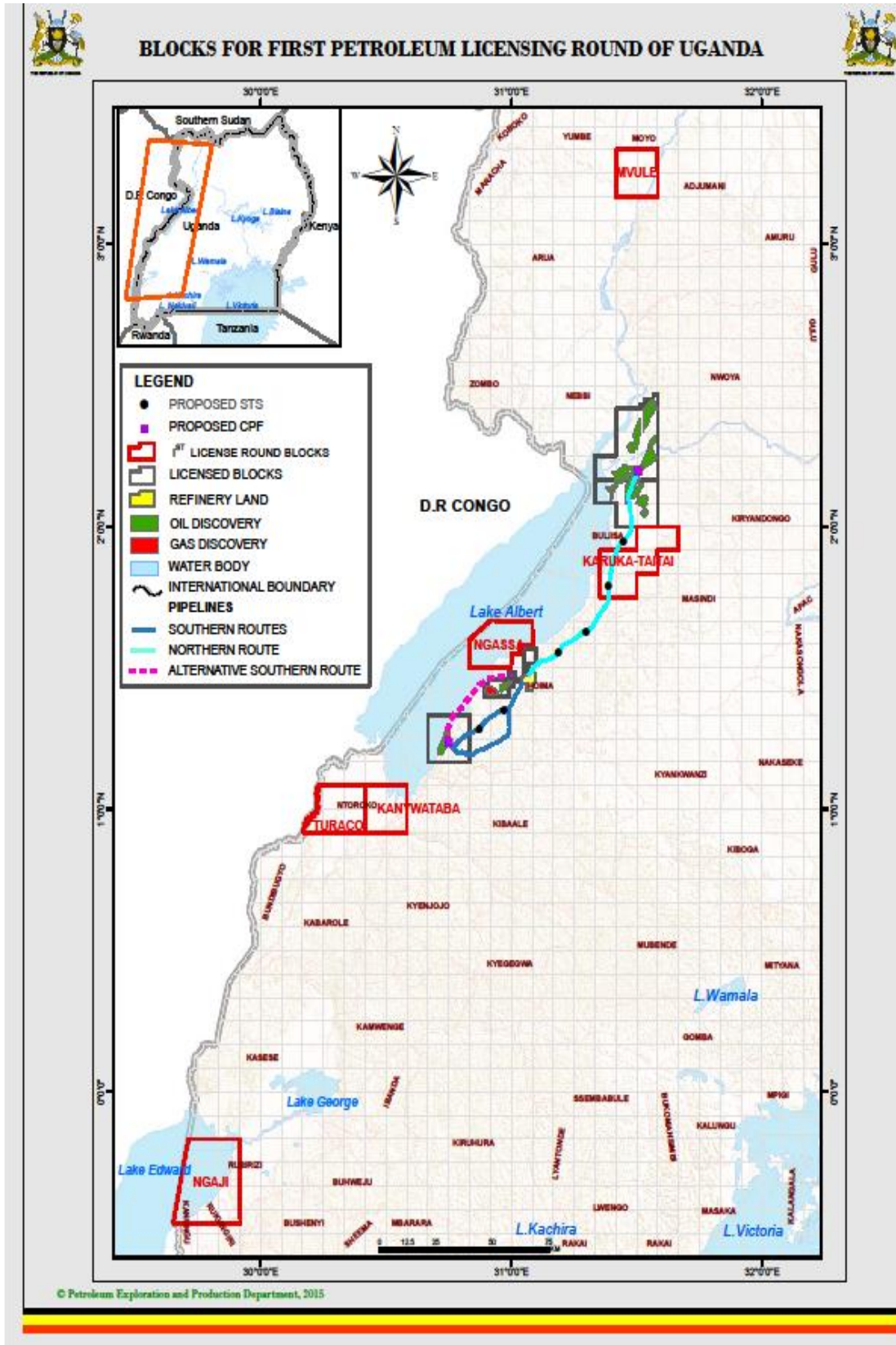


Fig. 27: Map showing the blocks on offer for the 1st Licensing round



Fig. 28: A Group Photo with Some of the Participants in the Road- Show for the First Petroleum Licensing Round

American Association of Petroleum Geologists Annual Convention and Exhibition, 2015

The 2015 American Association of Petroleum Geologists (AAPG) annual convention and exhibition was held in Denver, Colorado, USA from 31st May to 3rd June, 2015. The Directorate was represented at the conference by Messrs. Ernest Rubondo, Director; Frank Mugisha, Principal Geophysicist; Dozith Abeinomugisha, Principal Geologist and Nurudin Njabire, Geologist. The objective of participation was to promote Uganda's 1st Licensing Round, the country's petroleum potential and other investment opportunities. Mr. Dozith Abeinomugisha and Nurudin Njabire co-authored and presented a paper at the conference entitled; 'A Tectono-Stratigraphic Development of the Albertine Graben of Uganda, Western Arm of East African Rift System Based on Seismic and Well Data'.

Ninth Germany-Africa Energy Forum

The 9th Germany-Africa Energy Forum was held from 4th to 5th May 2015 in Hamburg, Germany, where about 400 people participated. The forum is an annual event, organized by the Afrikaverein der Deutschen Wirtschaft e.V. (German-African Business Association). The Ministry's team was led by Hon. Peter Lokeris, Minister of State for Mineral Development and comprised of Frank Mugisha, Principal Geophysicist, Gloria Sebikari, Senior Communications Officer and Nurudin Njabire, Geologist from the Directorate of Petroleum together with Walter Wafula, Senior Energy Officer from the Directorate of Energy Resources. In addition to participating in some of the technical sessions, the Ministry put up an exhibition booth to specifically promote the 1st licensing round for petroleum exploration in Uganda and other investment opportunities in the country's oil and gas and energy sectors.

Closure of Period of Application for Qualification

The Ministry of Energy and Mineral Development extended the deadline for submission of Applications for Qualification (AFQ) for the 1st Licensing round for petroleum Exploration from 29th May 2015 to 30th June, 2015. The extension of the qualification process by one month was to enable the Ministry undertake promotion and marketing in premier international conferences and Media.

The Process of receiving the Request for Qualification ended on 30th June, 2015 with the Ministry issuing the RFQ document to nineteen (19) applicants listed below:

- i. Africa Global Resources (Telconet Capital Ltd Partnership-Tatneft-Rostec) JV from Russia
- ii. ARMOUR ENERGY Ltd of Australia
- iii. Atlas Petroleum International Limited from Nigeria
- iv. Brightoil Petroleum Uganda Ltd of Hong Kong/China
- v. Dragon Oil International Ltd of United Arab Emirates (UAE)
- vi. Glint Energy LLC of United States of America (USA)
- vii. Mubadala Petroleum of UAE
- viii. Niger delta Petroleum Resources from Nigeria
- ix. Oil and Natural Gas Corporation Videsh Limited (ONGC) of India
- x. Oranto Petroleum International Limited from Nigeria
- xi. Petoil Limited from Turkey
- xii. Petrica Energy AS from Norway
- xiii. PTT Exploration and Production PCL from Thailand
- xiv. Rapid Africa Energy (Pty) Ltd of South Africa
- xv. Rift Energy Corp from United States of America (USA)
- xvi. SASOL Exploration and Production International of South Africa
- xvii. Swala Energy Ltd of Australia
- xviii. Tullow Uganda Operation Pty Ltd affiliated to Tullow Ireland
- xix. Waltersmith Petroman of Nigeria

Issuance of Bidding Documents

On 1st October, 2015; Government through the Ministry of Energy and Mineral Development issued bidding documents to the 16 Qualified Applicants. The bidding documents comprised of the Request for Proposal, Model Production Sharing Agreement 2015 (MPSA), Model Confidentiality Agreement for sale of data, Petroleum (Exploration, Development and Production) (Data Sale) Regulations 2014 and Petroleum (Exploration, Development and Production) (Data Sale) (Amendment), Regulations 2015. Issuance of the bid documents marked the commencement of the Request for Proposal stage which entails bidding and competitive process of the licensing round. A bidders' conference to answer bidders' queries was held at the Lake Victoria Serena Resort Hotel, Kampala on 1st October 2015 and was attended by at least 40 representatives of the potential bidders. The Bidders were expected to submit their proposals by 15th January 2016.

3.1.2 Applications for Production Licenses

Of the 21 petroleum discoveries that have been made in Uganda to date, the licensed companies completed appraisal and submitted applications for production license over 16 of these discoveries. One production license over the Kingfisher field, operated by China National Offshore Oil Corporation (CNOOC) Uganda Limited, was issued during February 2012. Discussions on the applications for the other fifteen discoveries were in advanced stages. Various engagements on the applications were held between the licensed oil companies and Government during the year. In Exploration Area 2 (EA2) operated by Tullow Uganda Operations Pty Ltd (TUOP), the ministry reviewed addenda to three (3) Field Development Plans (Mputa-Nzizi-Waraga, Kigogole-Ngege-Ngara-Nsoga and Kasamene-Wahirindi) and comments generated therein were submitted to the company for consideration. Several workshops were held to discuss the comments of the applications for production licenses. In Exploration Area 1 (EA1) operated by Total E&P Uganda B.V (TOTAL), the company in view of addressing comments earlier raised on their five applications for production licences resubmitted two addenda and two Field Development Plans (FDPs) together with Petroleum Reservoir Reports (PRRs)

in November 2015. Several meetings were held between the ministry and the company regarding the applications before submission of the addenda.

3.1.3 Opening up New Basins for Petroleum Activities and Speculative Surveys

PEDPD contracted the services of Dutch Geo Consultancy to prepare a Framework for Data Acquisition, Processing and Marketing entailing Legal, Technical, Financial and Health Safety and Environment (HSE) provisions. The law requires that Environmental and Social Impact Assessment are carried out before new areas are opened up for licensing. The impact assessment will address impact of petroleum activities, including speculative seismic surveys, on environment, trade and industry, etc. in the basins to be opened up for petroleum licensing. These basins will include those outside of the Albertine Graben namely, Lake Kyoga, Hoima and Moroto-Kadam basins.

PEDPD has so far developed draft Terms of Reference (ToRs) to commence the process of procurement of a consultant to undertake the Environmental and Social Impact Assessments (ESIAs) for the speculative surveys in new basins. However, the scope of the assignment was found to be wider than initially envisaged, with the ToRs initially developed necessitating significant revision. The process to procure the consultant to undertake impact assessment is now planned for July 2016. Once the ESIA is finalised and a certificate awarded by NEMA, the Department will embark on the process of tendering speculative Seismic surveys to companies for the acquisition of data in the new basins.

3.1.4 Development of a Stratigraphic Framework for the Albertine Graben

Due to the fact that each licensee in Uganda had a different nomenclature to the stratigraphy of the Albertine Graben, a single understanding and naming convention is needed. MEMD set up a Stratigraphic Commission comprising of PEPD, universities, researchers and the oil companies to study the existing data and come up with a single nomenclature. The process of development of a coherent Stratigraphic framework for the entire Albertine Graben was important for:-

- Conflicting stratigraphic schemes by different workers existed
- Developing a consistent framework to define the succession in the Albertine Graben
- Harmonized definition and understanding of reservoir intervals.

To date, four (4) basins in the Albertine Graben have been completed and their reports are available. PEDPD has started on the process of publishing the results of these basins in technical journals like AAPG, Journal of Sedimentology and Stratigraphy etc.

3.1.5 Evaluation of Unconventional Hydrocarbon Resources

The assessment of Unconventional Resources is being carried out as part of the on-going Basin analysis studies. To date, the studies have been carried out on three (3) basins. Below is a tabulation of the potential Unconventional Resources that have been evaluated in the three basins, whose Petromod models have been generated by the Basin Analysis team.

Table 7: Tabulation of Generated, Expelled and Reservoired volumes in the three (3) basins with estimates of the unconventional potential

Basin	Generation	Expulsion	Reservoired Hydrocarbons in Traps
Southern Lake Albert basin Unconventional and Remaining Potential	Oil: 9.3 Bbbls Gas: 6.0 Tcf Oil: 169 MMbbls Gas: 0.18 Tcf	Oil: 8 Bbbls Gas: 5.2 Tcf	Oil: 0.536 Bbbls Gas: 0.112 Tcf
Semlik Basin Unconventional and Remaining Potential	Oil: 25.79Bbbls Gas: 12.31 Tcf Oil: 0.7Bbbls Gas: 0.75 Tcf	Oil: 25.09Bbbls Gas: 11.7 Tcf	Oil: 0.737 Bbbls Gas: 0.23 Tcf
Lake Edward Basin, Reservoired in Source	Oil: 13 MMbbls Gas: 0	Oil: 3 MMbbls Gas: 0	
Northern Lake Albert + Pakwach area (On-going)			
Rhino Camp Basin (Not yet started)			

3.1.6 Field Geophysical and Geological (G&G) Data Acquisition

Two reconnaissance field trips were conducted during 2014 to Kadam-Moroto. There was no G&G expedition to any basin during 2015. Instead the Department concentrated on desk studies for Hoima basin and on the reconnaissance data acquired in Kadam-Moroto basin. This was in preparation and anticipation that fully fledged field work will be carried out during 2016. The studies in the aforementioned areas aimed at achieving the following:-

- To outline any major structural anomalies and possible migration pathways that can be followed by mapping;
- To define the major structural trends and propose explanations for the evolution of the structures;
- To obtain better basin depth estimates, particularly sedimentary thicknesses over the observed structures;
- Deduce preliminary depositional models that can be used in the two areas as a representation of the sedimentological evolution
- To study any possible organo-sedimentary facies associations relevant to source rock deposition and/or occurrence as well as any evidence of deposition under anoxic conditions that can be followed up during the field excursion.

3.1.7 Regional Reservoir and Seal Study for the Albertine Graben

PEDPD in collaboration with Corelab UK undertook Phase II of the regional reservoir and seals study of the Albertine Graben. The Phase focused on the analysis of oil samples from the drilled wells and interpretation of data from the Wells in EA-1A in addition to the Ngassa well in EA2. This aided in better understanding of the reservoirs in the Northern Lake Albert area and geochemistry of the oils in the Graben. Subsequently the results will be available for data packaging for promotion and in preparation for the licensing round.

3.1.8 Policy, Legislation Formulation and Implementation

3.1.8.1 Drafting of the Petroleum Regulations

The working group on drafting of petroleum regulations for the Upstream and Midstream Acts led by the Ministry of Justice and Constitutional Affairs concluded the drafting of Technical, Health, Safety and Environment Protection, Metering and National Content Regulations for the upstream sub sector. The draft regulations were shared with stakeholders for comments during January 2015.

The working group reviewed and held discussions on the comments received from stakeholders on the draft upstream and midstream regulations. The sets of draft regulations that have been developed are:-

- The Petroleum (Exploration, Development and Production) Regulations, 2014.
- The Petroleum (Exploration, Development and Production) (Health, Safety and Environment Protection) Regulations, 2014.
- The Petroleum ((Exploration, Development and Production) (National Content) Regulations, 2014.

By the end of the year, drafting and consultations on the regulations was completed and awaiting the Minister's consideration.

3.1.8.2 Model Production Sharing Agreement (MPSA)

A working group comprising of representatives from the Ministries of Energy and Mineral Development, Justice and Constitutional Affairs as well as Finance Planning and Economic Development together with Uganda Revenue Authority continued the process of updating the Model Production Sharing Agreement (MPSA). The updating process is meant to align the MPSA with the new petroleum legislation in the country and to reflect the improved geological risk in Uganda. Drafting of the MPSA was concluded and the MPSA was approved by cabinet on 23rd September 2015.

3.1.8.3 Development of Standards for Petroleum Operations

The Technical Working Group handling standards for upstream petroleum activities deliberated on 12 standards and these were presented to the National Council of Standards for approval. The Technical Working Group handling Petroleum Management, Health, Safety, Security and Environment deliberated on 11 draft Uganda Standards. These will also be presented to the Council for approval in the forthcoming year. These draft standards are based on the International Standards Organisation (ISO) and are being proposed for adoption as Uganda Standards.

3.1.9 Institutional Development and Capacity Building

3.1.9.1 Institutional Development

a. Formation of a Directorate of Petroleum

Following approval from the Ministry of Public Service and in line with the National Oil and Gas Policy for Uganda, a Directorate of Petroleum to coordinate policy making; the development of the sector; and undertake licensing and national and capacity building among other roles was created in the Ministry during March 2015. The process of filling out the positions as per the approved structure commenced.

b. Formation of the Petroleum Authority and the National Oil Company

The National Oil Company was incorporated on June 12, 2015 under the Companies Act 2012 under the name Uganda National Oil Company Limited (UNOC). The Boards of UNOC and that of Petroleum Authority of Uganda (PAU) were approved by Parliament and inaugurated on 23rd October 2015 by H. E. the President of Uganda. The boards commenced their operations with the inaugural workshop for the UNOC and PAU held on 3rd to 5th November 2015; and by the end of 2015, PAU had undertaken the following activities:-

- The Board participated in Advisory Committee Meetings (ACMs) for the existing licenses to keep abreast of the ACMs discussions.

- The Ministry discussed with the Board the production license applications for the Tullow operated areas i.e. Kasamene-Waihrindi, Kigogole-Nsoga-Ngege-Ngara and Mputa-Nzizi-Waraga;
- The Board reviewed the midstream regulations and gave its comments to the Minister for consideration;
- Four members of staff from the Ministry of Energy and Mineral Development were seconded to the Board in the areas of Production Licenses, Regulations, licensing and administration, to support the initial operations of the company until formal recruitment is conducted.

By the end of 2015, UNOC had undertaken the following activities:-

- UNOC opened a Bank Account and developed a Company seal;
- Seven members of staff from MEMD were seconded to UNOC in the areas of geoscience, pipeline engineering, legal, petroleum economics, refinery engineering; Accounts and administration to support the initial operations of the company until formal recruitment is conducted;
- The board developed the organization and salary structures for UNOC and its subsidiaries in preparation for recruitment;
- A Cabinet memo for UNOC to participate in the Midstream activities was approved by Cabinet in December 2015. The activities include refinery, pipeline and storage facilities.
- UNOC participated in the 8th round of negotiations between GoU and the Lead Investor for refinery development that was held in December 2015.

3.1.10 National Content Development

3.1.10.1 National Content Strategy and Policy Framework

Following completion of the National Content Study in September 2011, a consultant, Bridge Consult SA was contracted in September 2012 to support PEDPD in undertaking the development of a strategy and plan for implementation of the study recommendations. The National Content Policy and Strategy for the oil and gas sector was finalized and is awaiting Cabinet approval.

3.1.10.2 Capacity Needs and Skills Analysis for the Oil and Gas Sector

The Ministries of Energy and Mineral Development and that of Education, Science, Technology and Sports with support from the World Bank engaged Mott MacDonald to undertake a Capacity Needs Analysis of the oil and gas sector within the country and prepare a workforce skills development strategy and plan for the sector. The key findings and recommendations of the Demand and Supply Assessment formed the basis for development of the workforce skills strategy and plan. The purpose of the Workforce Skills Development Strategy & Plan (WSDSP) is to maximise the quantity and quality of employment opportunities for Ugandans in Oil & Gas and related sectors. A series of consultative workshops were held in January and February during which the Demand and Supply report was presented to the JV Partners and the Top Management of the National Planning Authority.

3.1.11 Infrastructure Development

3.1.11.1 Identification and Definition of Necessary Tools for Data and Records Management

The Crane reference database continued to be updated and maintained. Prototypes of new databases including National Content and Licensing Round were tested for incorporation into the Crane reference database. Following the upgrade of the Department's ICT infrastructure, the Crane database was moved to SQL Server machine.

The data management team also started a project to integrate all the assets in the petroleum sector into the GIS platforms. The work-plan includes integration into GIS platform data from; sub-surface, development facilities, pipeline, Refinery, licensing blocks, etc. The outcome of this project will include online databases and web applications, web maps and dashboards for interactive user experiences.

3.1.11.2 Development of Procedures for Operations and Data Management

The process of connecting to the NITA-U Backbone Infrastructure (NBI) which was undertaken by Soliton Company was completed in May, 2015. Subsequent to joining the NBI, the Directorate secured 8Mbps of Internet bandwidth from NITA-U. The existing 2Mbps bandwidth from Infocom is being configured to run as a back-up link. This has improved daily operations in the Physical Data Room for licensing. The website www.petroleum.go.ug continued to be maintained but are fast running out of the 300MB space which was requested for. This is due to the increasing demand for information from public, stakeholders, investors and civil society organizations. There is, therefore, urgent need to procure at least 1GB of storage for the website. Two new workstations were procured and deployed for use in the Physical Data Room for the 1st Licensing Round.

3.1.11.3 Upgrading the Present Data and Records Management

The Registry team continued to manage records and documents in the Directorate. On average, 40 - 75 records and documents coming in and going out from the Directorate are processed on daily basis. To-date, 95% of the semi-current records (45,763 records) occupying disk space of 122 GB have been stored.

3.1.11.4 Cores Database and Storage

The department continued to update the cores database. The database was improved to include cut length, recovery, and total cored length in the Graben among others. The Cores database schema was updated and the new design improvements integrated into the Crane database. The department is currently storing a total length of 1,062m of core in its core store recovered from the past drilling campaigns. Washed and dried cuttings together with geochemical samples from Kingfisher-4, 4A, 4B & 4C wells placed in 44 boxes were received on 12th February 2015 and all are in good condition. ICON laboratory undertook routine core analysis of selected plugs from Waraga-3 and 3A well cores on behalf of Tullow Uganda Operations Pty Limited. The analysis was aimed at assessing the laboratory's competence and capability. ICON laboratory completed the analysis and a report was submitted on 30th April, 2015.

3.1.11.5 Physical Data Room

The Data Management and IT/ICT team were engaged in supporting the ongoing 1st Licensing Round by among others; setting up the Physical Data Room, data packaging, providing maps for promotions, defining IT/ICT requirements, implementing new Licensing Round Information Carriers into the Crane database and engaging in procurement of the required goods and services. This work was carried out with support from Ms. Schlumberger Information Solutions.

Construction of the National Petroleum Data Repository, Laboratories and Offices

Phase 2 construction of the Petroleum Data Repository, Laboratory and Offices, which comprises of construction of the support structure and roof for the data repository, main office block and core laboratory and office space, was completed. Procurement of a contractor to undertake Phase 3 works commenced.

3.1.12 Monitoring of Oil Company Activities

The three licensed oil companies, namely; Total E&P Uganda B.V (TEPU) operating Exploration Areas (EA) 1 and 1A, Tullow Uganda Operations Pty Limited (TUOPL) operating EA2 and CNOOC Uganda Limited (CUL) operating the Kingfisher Discovery Area (KFDA) continued to undertake the approved work programmes. Following completion of the exploration and appraisal programs for EA 1, EA 2 and the Kingfisher Discovery Area (KFDA), there was a general reduction in field operations during the period under review.

3.1.13 Monitoring Field Activities

3.1.13.1 Drilling Kingfisher-4 (01N30E/105-2) Well

Drilling of well 01N30E/105-2 (Kingfisher-4) which commenced on 3rd September 2014 was completed after reaching Target Depth (TD) on 4th January 2015 and drilling into the M6 reservoir zone of Kingfisher-4C. Kingfisher-4C was the third technical side-track on well Kingfisher-4 following three stuck pipe incidents attributed to caving in of the borehole. A quick look analysis of wireline data revealed eight oil columns. The well was plugged and abandoned and the rig released on 8th February 2015.

3.1.13.2 Civil Works at Kingfisher Development Area (KFDA)

Civil works in the KFDA continued during the year with the main works being on the 10 km Kingfisher access road. This involved construction of an access road over the 400m drop escarpment terrain to the Buhuka Flats as well as several infield roads on the Buhuka flats joining the different proposed oil facilities. The access road was completed in December 2015.

3.1.13.3 Rapid Asset Survey (RAS) and Feeder Pipeline Route Survey in KFDA

CNOOC Uganda Limited (CUL) through its consultant, Survesis, commenced a Rapid Asset study (RAS) for the Kingfisher Development Area from May 2015, over the land that will host the Central Processing Facility (CPF), Well pads, Camp, in-field pipelines, access roads and the 47.871 km feeder pipeline from the proposed CPF in Buhuka Parish to the Refinery in Kabaale Parish. The overall objective of the study was to inform CUL's decision to optimize the 30m feeder pipeline route within the 2km study corridor in order to minimize displacement and involuntary resettlement. The survey involved stake holder engagements and field data collection. The RAS field data entailed; identification of property owners and the size of their respective parcel sizes, collecting position data of buildings/structures, and collection of socio- economic data.

3.1.13.4 Waster Removal Operations

Monitoring of waste removal from various sites was undertaken. Waste removal from Purongo Subcounty, Nwoya District commenced on 28th October 2014 was completed during the first Quarter of 2015. This waste removal followed a directive from National Environment Monitoring Authority (NEMA) that the drilling waste buried at Purongo by the previous operator of Exploration Area 1 (EA-1), Heritage Oil and Gas Limited, be excavated and removed for further treatment and disposal. M/s Enviroserve Ltd was contracted by Total E & P Uganda limited to undertake the waste removal, treatment and disposal at Enviroserve waste management facility in Nyamasoga, Hoima District. From Tangi waste consolidation area in Nwoya District, liquid waste was removed and taken to the Enviroserve Facility. A total volume of 1559m³ of waste water was removed and the activity was concluded during February 2015. In addition, a total of 3,114 tonnes of solid waste and 672m³ of liquid waste was dispatched to Nyamasoga from Bugungu waste consolidation site in Buliisa District.

3.1.13.5 Well Integrity Tests in EA2

As part of the routine exercises to ensure the safety of wells that have been drilled in the area, well integrity tests were carried out from 19th to 31st January 2015. Results showed that tests on all wells except Nzizi-3 and Kasamene-3 were successful. The two unsuccessful wells registered pressures during the test and a recommendation to continually monitor the two wells was made to Tullow Uganda Operations Pty, the operator of EA 2.

3.1.14 Monitoring of Costs of Petroleum Operations

The Petroleum (EDP) Act (2013) and the Production Sharing Agreements (PSA) require that Government ascertains costs due for recovery by licensees, reviews and approves budgets submitted by licensees and promotes well-planned, executed and cost efficient operations. In this regard, the Department undertook the following activities during 2016.

3.1.14.1 Review of Work Programs and Budgets

The directorate continued to support the reviews and evaluation of work programs and associated budgets that were submitted by the oil companies for 2015. In this regard, four Advisory Committee Meetings (ACMs), One Sub-committee of the ACM (for Kingfisher Development Area), four Finance Technical Meetings (FTMs) and two Technical Committee Meetings (TCMs) were held.

3.1.14.2 Development of a Costs Database

The process of introducing a costs module on the Crane Database continued. This module will include details of all exploration, development and production costs in Uganda and also archive all data extracted from third-party contracts submitted by operators.

3.1.14.3 Review of Audit Reports from Auditor General

The directorate continued to support the Office of the Auditor General (OAG) in conducting cost recovery audits for the various license areas. In this period, the Department supported the OAG's audit in the following areas:-

- On Tullow Uganda Operations Pty (TUOP)'s statement of recoverable expenditure for the years ending 31st December 2010 and 31st December 2011
- On auditing cost recoverable expenditure for TEPU in Exploration Areas 1 and 1A for the years ending 31st December 2012 and 31st December 2013.

3.1.14.4 Assessment of Technical Submissions

a. Review of Field Development Plans (FDPs) and Petroleum Reservoir Reports (PRRs)

Following a re-submission of the Kaiso-Tonya (Mputa, Nzizi and Waraga) and Ngiri Production Licence Applications (PLAs) by Tullow Uganda Operations Pty and Total E&P Uganda respectively, several workshops were held as indicated in Table 8.

Table 8: List of Production Licence Application related activities

Date	Activity
12 th – 15 th /01/2015	Review of resubmitted KW FDP & PRR
27 th – 30 th /01/2015	Review of resubmitted KNNN FDP & PRR
10 th – 13 th /02/2015	Review of Gunya FDP and PRR
17 th – 19 th /02/2015	Review of KW & KNNN Geomodels

23 rd /03 -25 th /03/2015	Meeting between Ministry of Energy and Mineral Development and the Oil companies to discuss outstanding issues regarding submitted PL Applications.
17 th – 20 th /03/2015	Review of resubmitted Jobi-Rii FDP & PRR
30 th /03 – 2 nd /04/2015	Review of Mpyo FDP and PRR
31/03 – 02/04/2015	Review of Mpyo FDP/PRR that was submitted in December 2014.
9-10/04/2015	Workshop with TUOP on Kaiso-Tonya (KT) FDP/PRR comments
13-14/04/2015	Review of Jobi East FDP/PRR
12/05/2015	Workshop with TEPU regarding the submitted Gunya FDP/PRR
17/06/2015	Submission of KW PLA addendum
19/06/2015	Submission of revised Gunya FDP/PRR
24/06/2015	Submission of KNNN PLA addendum

b. End of Activity Reports

The End of Activity Reports submitted by the licensees and reviewed by the Department in this period included:-

- Core description and faciological image log interpretation reports for Ngiri and Jobi fields;
- Plug and Abandonment reports, end of well drilling reports and end of Well Test reports for Ngiri, Jobi and Gunya fields;
- Polymer Flood Evaluation for Kasamene Field;
- Kasamene Numerical Simulation Interim Report;
- Downhole Heating System Simulation For Flow Assurance, Cost Estimates for Polymer Utilization and Central Processing Facility (CPF) and Crude to Power Project (CPP) options for Reservoirs in Buliisa Area;
- Gas Characterisation and Reservoir Continuity, Determination of H30, H27 and H25, KNNN, Geochemical Fingerprint Comparison of Oils from Gunya, Nsoga, Kigogole and Ngege Biostratigraphic synthesis of Lake Albert;
- EA-1 Annual Operations Report 2015;
- Gunya-3A Conventional Core Analysis Report;
- Ngiri-4A Oil-Water Drainage capillary pressure and Wettability index by centrifugation;
- Ngiri-4A Water-Oil Relative Permeability Measurement;
- Kingfisher final well Geology report;
- Kingfisher End of well Drilling Report and Kingfisher-4 wireline data, among others.

3.1.15 Compilation of Annual National Resources

The Department continued to carry out resource estimation for each of the discoveries in the country. Review of more information and data acquired during the final phase of appraisal is also in progress to better understand the reservoirs before development can commence. With the ongoing work, the resource estimates may change since additional work is especially being carried out to improve the recoverable volumes from each of the fields. The current Stock Tank Oil in Place (STOIP) estimate in the Albertine Graben stands at 6.5MMBBL and 1.4 billion Barrels of this is estimated to be recoverable. The Gas (Non-associated) Initially In Place (GIIP) stands at 499 BCF and the associated gas is estimated at 173 BCF.

3.1.16 Disposal of Crude Oil Produced From Well Testing Operations

During the appraisal period, the Licensed Oil Companies carried out well testing operations in the Albertine Graben and approximately 40,000 barrels of test crude oil was accumulated. This test crude oil is being stored at four locations in the Albertine Graben namely; Kasamene-1, Ngara-1 and Ngiri-2 well sites in Buliisa district and Tangi Camp in Nwoya district. The process of disposal of the test crude oil commenced in March 2015 but the process was unsuccessful because the bidders failed to demonstrate that they could handle the commodity without causing adverse effects. The Ministry embarked on the process to re-evaluate the disposal process before proceeding to re-tender the test crude oil.

3.1.17 Communicating for the Oil and Gas Sector

The Department undertook the following activities as part of the Implementation of the communication strategy for the oil and gas sector in the country.

3.1.17.1 Media Responses and Statements

- a. Responses to media inquiries were prepared and published on various issues including:-
 - "Impact on falling crude oil prices on Uganda's oil and gas sector",
 - "Sale of the 40,000 barrels of test crude oil",
 - "Outlook for 2015 for the oil and gas sector",
 - "Selection process for the lead investor for Uganda's Refinery Project,
 - "Estimated costs of production", among others.
- b. Close to 125 article/bulletins on oil and gas appeared in the media some of which were analysed and responded to;
- c. An Article entitled "Uganda's Oil and Gas Sector: Transforming Uganda's Black Gold to Green Gold", was prepared for the Ministry's Sector Working Group Magazine;
- d. In addition the following media statements and articles were prepared and published in local and/or international media and on the Directorate's website:-
 - "Uganda's Refinery Project; RT Global Resources Emerges Selected Preferred Bidder";
 - "Cabinet Approves First open Licensing Round for Petroleum Exploration in Uganda" ;
 - "Sale of Accumulated Test Crude Oil Resources";
 - "Uganda's oil projects still profitable amidst falling oil prices",
 - "Uganda; a hub of investment opportunities in the oil and gas sector";
 - "Norwegian Support to the Oil and Gas Sector in Uganda";
 - "Closure of the Application for Qualification of the Licensing Round for Petroleum Exploration, Development and Production Blocks in Uganda";
 - "Road Show for Uganda's First Licensing Round for Petroleum Exploration, Development and Production";
 - "Extension of Deadline for Submission of Applications for Qualification for Uganda's First Petroleum Licensing Round";
 - "Promotional Events for Uganda's First Licensing Round for Petroleum Exploration, 2015", among others.

3.1.17.2 Engagements with the Media

- a. The Ministry organised capacity building workshops for journalists (print, online and broadcast media) from Eastern and Northern Uganda which were held on 15th January 2015 and 22nd January 2015 respectively. The workshops were attended by over 140 journalists from Palisa, Butaleja, Bududa, Sironko, Budaka, Soroti, Jinja, Kumi, Tororo, Kapchorwa, Bugiri, Busia, Moroto, Manafwa, Mbale districts in Eastern Uganda and Gulu, Lira, Arua, Nebbi, Zombo, Moyo, Yumbe

districts in Northern Uganda. The key objective of these workshops was to share updates on the oil and gas sector with journalists in order to enable them cover the sector from a better informed point of view.

- b. A Press Conference to announce the 1st competitive licensing round by Hon. Eng. Irene Muloni, Minister for Energy and Mineral Development was held on 24th February 2015. The announcement was attended and covered by both local and international media and an advert on the same was run in the New Vision, Daily Monitor and the East African Newspapers.

3.1.17.3 Radio and Television Programmes

a. Radio and Television Talkshows

The directorate participated in radio and television programmes organized by the Office of the Prime Minister whose focus was to give updates on Uganda’s oil and gas sector and the opportunities in the development phase. The talk shows and respective participants are shown in Table 9 below.

Table 9: Radio and Television Programmes held during the quarter

Station	Date	Participants
Kingdom FM-Luganda	30 th /03/2015	Bashir Hangi, Communications Officer Betty Namubiru, National Content and Capacity Building Officer
Super FM-Luganda	31 st /03/2015	Bashir Hangi, and Betty Namubiru
Akaboozi—Luganda	23 rd /03/2015	Catherine Bekunda, Communications officer Lilianne Nagawa, Process Engineer
Star TV—Luganda	24 th /03/2015	Bashir Hangi and Isaac Kabuye, Legal Officer
Namirembe FM-Luganda	25 th /03/ 2015	Catherine Bekunda and Betty Namubiru
Radio Maria-English	26 th /03/2015	Catherine Bekunda and Betty Namubiru

b. Production of Television Documentary

The Ministry contracted Ms. Ideal Solutions Limited to produce a video documentary on Uganda’s oil and gas sector. The contractor undertook field shooting activities during January 2015 in areas with oil and gas operations in the districts of Hoima, Buliisa and Nwoya. A treatment script for the documentary was approved by the Directorate and a draft video documentary submitted for review during March 2015. Also the draft documentary was used at the Uganda booth during the East African Petroleum Conference and Exhibition in Kigali and later reviewed and comments sent to the contractor who incorporated the comments in the draft documentary and also submitted a treatment script for the second documentary which was being reviewed by the time of this reporting.

3.1.17.4 Engagement with Stakeholder Groups

a. Engagements in Areas of Operation

During the period under review, the Directorate participated in the following engagements in operational areas:-

- (i) A meeting between Total E&P Uganda and Tullow Uganda Operations Pty with the Political and Technical leadership of Buliisa district as part of the quarterly stakeholder engagement activities, on of 9th February, 2015;

- (ii) Hoima District and Nebbi District Multi-stakeholder workshops organized by the respective district local governments with support from Maendeleo ya Jamii (MYJ), held on 12th March 2015 and 19th March 2015 respectively;
- (iii) The Civil Society Coalition on Oil (CSCO) organised workshop on local participation in the oil and gas industry, on 13th March, 2015 at Acholi Inn, Gulu
- (iv) Sub-county community meetings organised by International Alert, a Civil Society Organisation. The engagements were held in Kyangwali and Buseruka in Hoima District and Ngwedo and Buliisa in Buliisa District from 22nd to 24th April, 2015. The objective of the meetings was to dialogue with the communities in these areas on issues related to security, land, immigration, among others through a question and answer approach;
- (v) Stakeholder engagements for the RAS in KFDA were undertaken between 27th May and 16th June 2015. The engagements included meetings with the district leadership followed by meetings with the leadership of the three affected sub-counties of Kyangwali, Kabwoya and Buseruka;
- (vi) Training for Buliisa Farmers Association that was organised by Association of Oil and Gas Service Providers and held at Buliisa Resource Centre;
- (vii) Community engagements organised by Rural Initiatives for Community Empowerment (RICE) in the districts of Buliisa, Nwoya, Nebbi and Arua between 22nd and 25th June 2015.

b. Facilitating Engagements/ Dialogues Organised by Stakeholder Groups

The following workshops/ meetings/ debates/ dialogues were facilitated by the directorate during the period under review:

- (i) Mr. Ernest Rubondo, Ag. Director made a presentation on “The Oil and Gas Sector in Uganda- Role of Missions” during the annual retreat for Uganda’s Ambassadors which was organized by the Ministry of Foreign Affairs and held on 5th January, 2015 in Kampala. Mr. John Bosco Habumugisha, Assistant Commissioner and Mr. Bashir Hangi, Communications Officer also attended the retreat.
- (ii) Mr. Ernest Rubondo and Ms. Betty Namubiru, National Content Development and Capacity Building attended an Energy Workshop on East African Natural Resource Developments in Maputo Mozambique that was held between 20th and 21st January 2015 and made a presentation titled “Local content Considerations in East Africa”. The Conference was organized by King Abdullah Petroleum Studies and Research Center (KAPSARC).
- (iii) Mr. Dozith Abeinomugisha, Principal Geologist participated in a Donor Working Group Discussion organised by Democratic Governance Facility held on 22nd January, 2015 in Kampala, to discuss the Implication of the Oil Price Slump.
- (iv) Mr. Fred Kabanda, Principal Geologist together with the National Content Officers participated in the Dissemination of Findings and Conclusions of the World Bank Report “Leveraging Oil and Gas Industry for the Development of a Competitive Private Sector In Uganda” that was held on 28th January 2015 in Kampala.
- (v) A team led by Mr. Fred Kabanda - Principal Geologist that included Ms. Christine Kabagenyi and Mr. Ronald Goolala, National Content Officers, Ms. Gloria Sebikari, Senior Communications officer, and Mr. Mugulusi Gonansa, Economist participated attended the 3rd Annual Stanbic Local content Conference held at Sheraton in February 2015. Mr. Kabanda made a presentation titled “the status of the oil and gas sector in Uganda and investment opportunities”.
- (vi) Mr. Honey Malinga, Assistant Commissioner attended an Intercultural Dialogue for Peace and Development in the African Great Lakes Region "Fuelling Conflict or Development? Cross

Border Oil and Gas Resources in the African Great Lakes Region” that was held on 2nd February, 2015 in Kampala.

- (vii) Mr. Fred Kabanda and Mr. Clovice Irumba, Petroleum Geochemist attended a Public Lecture on "Falling Oil Prices and a Rebased Economy: Implications for Growth and Employment" by Stefan Dercon, DFID's Chief Economist and Professor at Oxford University which was organized by International Growth Centre in Partnership with Bank of Uganda on 18th February, 2015 in Kampala.
- (viii) Mr. Ronald Goolala and Ms. Christine Kabagenyi, National Content Officers attended the Launch of the St. Simon Peter's Vocational Training Centre (SSPVT) Upskilling Project organised by Q-Sourcing that was held on 5th March 2015 in Hoima.
- (ix) Mr. Ernest Rubondo together with Ms. Proscovia Nabbanja, Senior Geologist, Ms. Irene Batebe, Petroleum Officer and Ms. Betty Namubiru attended the Launch of a research report commissioned by Akina Mama Wa Africa on Oil and Gas Extraction in East Africa; An African Feminist View that was held on 27th February 2015 in Kampala. Mr. Rubondo made a key note address during the event.
- (x) Mr. Clovice Irumba, Ms. Betty Jackie Namubiru and Mr. Tusingwire Edgar participated in ACODE. Mr. Irumba made a presentation titled "National Content Policy of Uganda".
- (xi) Ms. Jane Byaruhanga, Environment Officer facilitated a Capacity Building Workshop for Civil Society Organisations on Environment Management for Oil and Gas Sector that was held in Masindi from 25th to 29th May, 2015 organised by USAID/ Tetra Tech.
- (xii) Mr. Clovice Irumba facilitated a training session on Equitable Use and Valuation of Natural Resources organised by The International Law Institute – Africa Center for Legal Excellence that was held on 16th June 2015 in Entebbe.
- (xiii) Messrs Ernest Rubondo, John Bosco Habumugisha, Assistant Commissioner, Philips Obita, Senior Geophysicist, Ms. Gloria Sebikari and Ms. Betty Namubiru, National Content Officer participated in Uganda Chamber of Mines and Petroleum Oil and Gas Convention 2015 held on 28th April, 2015 in Kampala. Mr. Ernest Rubondo made a presentation.
- (xiv) Mr. Dozith Abeinomugisha, Principal Geologist and Ms. Gloria Sebikari attended a Conference organised by Democratic Governance facility on "Oil in Uganda: A Public Opinion Approach" that was held on 14th May 2015 in Kampala.
- (xv) Facilitated a training course at Institute for Petroleum Studies Kampala on April 24, 2015 in Kampala. The Directorate was represented by Messers Bashir Hangi, and Tonny Sserubiri, Palynologist.

c. Stakeholder Visits to the Albertine Graben

The directorate together with licensed companies facilitated visits for stakeholders to operations in the Albertine Graben during the period. The objective of these visits was to expose the different stakeholders to the operations with a view to get a better understanding of the activities. Some of the visits held are indicated in Table 10 below.

Table 10: Stakeholder visits to oil and gas operations in the Albertine Graben

No.	Group	Area Visited and Date
1.	Members of Parliament from Bunyoro	Refinery Site, Kingfisher, January 2015
2.	Makerere University and USAID TetraTech	Refinery Site, EA 2, EA1, Kingfisher, January 2015
3.	Makerere University MSc Petroleum Geoscience Students	Karugutu and Semliki, January/February 2015
4.	Senior Citizens from Uganda Golf Club	Refinery Site, EA 2, EA1, February 2015

5.	Democratic Governance Facility and RICE-WN	EA 1, March 2015
6	Manchester University Students	Kingfisher, March 2015
7.	Vice Chancellors and Senior Academic Staff from Higher Institutions of learning in Uganda	EA 1 and 2, March 2015
8.	Officials from Senior Command and Staff College Kimaka	Refinery Site, EA 2, EA1, March 2015
9.	Deputy Chief Opposition Whip and Members of Parliament on the Shadow Cabinet	Kingfisher, March 2015
10.	Multi Institutional Environment Monitoring Committee and USAID TetraTech	Refinery Site, EA 2, EA1, Kingfisher, March
11.	Institute of Petroleum Studies	Refinery Area, EA 1 and 2, Kingfisher, April 2015
12.	USAID Tetra Tech & Kyambogo University	Refinery Area, EA 1 and 2, Kingfisher, April 2015
13.	ESIPPS International Limited	Refinery Area, April 2015
14.	Ministry of Water and Environment, Development Partners Technical Review	Kingfisher, April 2015
15.	Buganda Kingdom Officials	EA 1 and 2, Kingfisher, May 2015
16.	Makerere university, Department of Geology	Semliki Basin, June 2015
17.	Civil Society Coalition on Oil	Waste Consolidation Sites, June 2015
18.	Oil for Development, Norway	Refinery Area, EA 1 and 2, Kingfisher, June 2015

3.1.18 Updating of the Directorate's Website

Regular updates on the website (www.petroleum.go.ug) were made including uploading press releases, Frequently Asked Questions, status of the implementation of the oil and gas policy, among others.

3.1.19 Regional Cooperation

3.1.19.1 7TH East African Petroleum Conference and Exhibition 2015 (EAPCE'15)

a. Uganda's Participation at EAPCE'15

The 7th East African Petroleum Conference and Exhibition (EAPCE'15), hosted under the auspices of the East African Community (EAC) was held from 3rd to 6th March, 2015 at Serena hotel in Kigali, Rwanda. The theme of the conference was; " EAST AFRICA REGION - Proven Destination for Investment in Petroleum Resources for Regional Energy Sufficiency and Lasting Socio-Economic Development". The conference had a total of 56 oral and 15 poster presentations and an exhibition which attracted 24 exhibitors from around the world. The team from the Ministry was led by Hon. Eng. Irene Muloni and comprised of Hon. Peter Lokeris, Dr. Fred Kabagambe-Kaliisa, two members of Parliament from the Natural Resources Committee, District Chairpersons from Hoima, Buliisa and Nwoya Districts, four of the nominated board members of the Petroleum Authority and the National Oil Company and technical staff from the Ministry. The following presentations were made by the Ministry during the conference:-

- (i) Uganda's First Licensing Round for Petroleum Exploration, Development and Production by Hon. Eng. Irene Muloni, Minister of Energy and Mineral Development.
- (ii) Status of Uganda's Oil and Gas Sector, Investment Opportunities by Dr. F.A. Kabagambe-Kaliisa, Permanent Secretary, Ministry of Energy and Mineral Development, Uganda
- (iii) Meeting the East African region's energy needs by Mr. Ernest Rubondo, Ag. Director, Petroleum Directorate.
- (iv) Fault controlled extension regime – a case of the Albertine Graben – East African Rift System, Uganda by Mr. Dozith Abeinomugisha, Principal Geologist.
- (v) Hydrocarbon potential for areas planned for licensing and implementation Plans by Mr. Frank Mugisha, Principal Geophysicist.
- (vi) Development of Petroleum Resources in Remote Areas: The Case of Uganda's Discoveries by Mr. Fred Kabanda, Principal Geologist.
- (vii) Geochemical Characterisation and Correlation of Crude Oil and Sediment Extracts from two Oil Fields and Discovery Areas in the Albertine Graben, Uganda by Mr. Joshua Lukaye, Senior Geochemist.
- (viii) A 3D-Model for Petroleum Generation and Migration in the Semliki Sub-Basin, Albertine Graben, Uganda by Dr. Simon Echegu, Basin Analyst.
- (ix) Strategic Environmental Assessment as a planning tool for oil and gas sector in Uganda by Dr. Joseph Kobusheshe, Environment Specialist.
- (x) Stakeholder Engagement in Uganda's Oil and Gas Sector by Ms. Gloria Sebikari, Senior Communications Officer.
- (xi) Securing a Social License to Operate in Oil and Gas Host Communities by Mr. Bashir Hangi, Communications Officer.
- (xii) Planning and Challenges of EOR as a reservoir management strategy in a new production province – a case of Uganda Eng. Herbert Magyezi Mugizi, Petroleum Engineer.
- (xiii) The need for optimal Infrastructure development by Ms. Irene Batebe, Petroleum Officer/ Refining.
- (xiv) Integrated Modelling Using 2D Seismic, Well Data, and Potential Field Data by Mr. Tonny Ddungu, Geophysicist.
- (xv) National Content Development in the Oil and Gas Sector in Uganda by Ms. Betty Jackie Namubiru, National Content Officer.
- (xvi) Prospectivity of the Semliki Basin: A Case study of Kanywataba and Turaco prospect areas by Mr. Felix Ocitti, Geologist.
- (xvii) Lithostratigraphic Framework of the Albertine Graben, Uganda by Ms. Catherine Amusugut, Geologist.
- (xviii) Poster Presentation on Exploration and Development in the East-African Rift Basin and other Interior Basins, a Case Study of Semliki Basin Uganda by Ms. Twebaze Caroline, Geophysicist.
- (xix) Poster Presentation on Minimal Environmental impacts during oil and gas operations; a case of the Albertine Graben, Uganda by Ms. Christine Ainabyona, Laboratory Technician.

b. Uganda's Exhibition Booth at EAPCE'15

The Directorate exhibited the petroleum potential of the Albertine Graben and investment opportunities and in Uganda's petroleum sub-sector. The 1st licensing round for petroleum exploration in Uganda featured prominently during the conference. Over fifty (50) companies/organisations visited Uganda's exhibition booth and these comprised of independent Exploration and Production (E & P) companies, Seismic service companies, Government agencies, Civil

Society organisations and media houses, several of them expressing interest in the next licensing round for oil blocks in Uganda and other related services.

c. EAPCE'15 Excursions to the Albertine Graben

Uganda hosted pre-conference and post-conference field excursions to the Northern and Southern parts of the Albertine Graben respectively. Six delegates participated in the pre-conference Excursion to the central Albertine Graben, which took place from 28th February to 2nd March 2015. The field excursion mainly covered the geology and discoveries in the Kaiso-Tonya, Buliisa-Wanseko and Pakwach areas. Nine (09) delegates participated in the post-conference field excursion to the southern Albertine Graben, which took place from 8th to 10th March 2015. The main objective of the field trip was to enable participants experience the spectacular geology of the Albertine Graben and at the same time enjoy the best in terms of tourism. The field excursion took participants through the Semliki and Lake Edward- George basins, and Queen Elizabeth National Park.



Fig. 29: 7th EAPCE' 15 Delegates at the Ngaji-1 restored well site in Exploration Area 4B

3.1.20 Northern Corridor Infrastructure Summit

The Directorate participated in the Northern Corridor Integration Projects (NCIP) Summit preparatory meetings held at Ministry of Foreign Affairs offices in Kampala. The Directorate spearheads the Refinery Development Committee under the Summit; the Committee meeting on Uganda's Refinery Project was held on the 2nd June, 2015 in Kampala. The Directorate also coordinated the meeting of the Committee on pipeline development that took place on the 3rd June, 2015 in Kampala. The meetings reviewed the progress of the different projects and set required actions to be undertaken prior to the next summit.

3.1.21 Study Visit by National Oil Corporation, Kenya

A delegation from the National Oil Corporation of Kenya (NOCK) led by Ms. Sumayya Hassan-Athmani, Chief Executive Officer held a benchmarking study visit to the Directorate of Petroleum on 25th and 26th May, 2015. Some of the key areas of interest and discussion included:

- Developing petroleum policy – what are the key aspirations for Uganda in developing its petroleum resource
- Legal, regulatory and institutional set up for the oil and gas sector
- Health, Safety and Environment
- Managing the work programmes of operators.
- Development of local content and approaches to capacity building
- National oil company framework
- Planning and implementing field development activities.

3.1.22 Financial Report

3.1.22.1 Recurrent Programmes

Petroleum Exploration, Development and Production Department (PEDPD) utilised Uganda shillings One billion, Two hundred seventeen million, Three hundred ten thousand, Five hundred thirty one on recurrent programmes as summarised in Table 11 below.

Table 11: Summary of PEDPD Recurrent Budget Expenditure for 2015

Code	Item	Expenditure (UGX)
30301	Promotion of the country's petroleum potential and	887,482,301
30302	Initiate and formulate petroleum policy and legislation	47,171,564
30303	Capacity building for the oil and gas sector	84,891,799
30304	Monitoring Upstream Petroleum Activities	68,783,197
30305	Implementation of a Communication strategy	17,999,359
30306	Participation in Regional initiatives	110,982,311
	Total	1,217,310,531

3.1.23 Development Budget

3.1.23.1 Project – Strengthening the Development and Production Phases of Oil and Gas Sector

PEDPD utilised Uganda shillings twelve billion, seven hundred fifty seven million, one hundred seventeen thousand, eight hundred forty two on GOU - Development programmes as summarised in the table below.

Table 12: Summary of the PEDPD Development Budget Expenditure for 2015

Code	Item	Expenditure (UGX)
30301	Promotion of the Country's Petroleum Potential and Licensing	1,013,739,391
30302	Initiate and formulate petroleum policy and legislation	697,243,799

30303	Capacity building for the oil and gas sector	3,618,909,025
30304	Monitoring Upstream Petroleum Activities	1,926,224,174
30305	Development and Implementation of a Communication strategy for the Oil and Gas Sector	68,465,627
30306	Participation in Regional initiatives	51,104,694
30351	Transfer to the other Government Institutions (Preparation for Transition to new institutions)	1,693,954,172
30372	Non Residential Buildings	2,620,811,271
30372	Other Structures	849,474,951
30372	Monitoring. Supervision and Appraisal of Capital Works	217,190,738
	TOTAL	12,757,117,842

3.1.23.2 Strengthening the Management of the Oil and Gas Sector in Uganda - Phase II

This is a Norwegian Government supported programme which commenced during 2015 after its approval during the 6th Annual meeting of the Programme which was held in March 2015 and subsequently the Programme Agreement signed in May 2015 and commencement was during July 2015. Total funding of the programme is 53 Million NOK for a period of three years. The objective is to contribute to the achievement of the goal of the National Oil and Gas Policy of Uganda and the programme's key activities are:-

- To finalise activities which started in the previous Programme but were not concluded;
- Undertake new activities which were identified as the sector goes into the development and production phases of the petroleum value chain;
- Bridge gaps that were identified as the sector progressed into its development and production phases.
- The Programme utilised Uganda shillings One billion, nine hundred thirteen million, nine hundred nineteen thousand, as summarised in Table 13 below.

Table 13: Summary of the PEDPD Development (Donor) Budget Expenditure for 2015

Pillar Category	Expenditure (USD)	Expenditure (UGX)
Resource Pillar	20,334	71,170,645
Revenue Pillar	325,103	1,137,858,855
Environment Pillar	2,650	9,275,000
Programme Management	198,747	695,614,500
Total	546,834	1,913,919,000

3.1.23.3 Non-Tax Revenues

The Table below shows the Non-Tax Revenues raised from Upstream Petroleum activities during 2015.

Table 14: Non-Tax Revenues raised from Upstream Petroleum activities

NO	PAYEE	DATE	PURPOSE	Amount (USD)	Amount (UGX)
1	Total E&P	04/02/2015	Training Fees EA - 1A (6 month) and Surface Rental Fees (Lyc discovery)	\$100,641	286,186,357
2	CNOOC Uganda Ltd	20/03/2015	KFDA Annual surface rental & training fees	\$372,000	1,077,371,520
3	Total E&P	29/06/2015	Annual Surface Rental (\$4,485) and training fees (\$75,000) for EA1	\$79,485	256,304,947
4	Total E&P Uganda	29/07/2015	Training Fees EA -1A	\$100,000	337,738,902
5	Tullow Ug. Operations Pty	04/11/2015	Annual Training Fees & Surface Rentals for EA2 for 2015.	\$61,453	216,537,144
6	SOCO E&P DRC	21/01/2015	Sale of Data	\$55,000	158,394,500
7	Petoil Uganda Ltd	27/02/2015	Payment for RFQ - 1 st Licensing round	\$20,000	57,498,000
8	Atlas Petroleum International Ltd	11/03/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,719,856
9	Oranto Petroleum Ltd	16/03/2015	Payment for RFQ - 1 st Licensing round	\$20,000	58,135,040
10	Niger Delta Petroleum	23/03/2015	Payment for RFQ - 1 st Licensing round	\$20,000	58,470,600
11	Telconet	08/04/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,311,400
12	Rift Energy Corporation	20/04/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,594,200
13	Petrica Energy AS	20/04/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,594,200
14	PTT Exploration and Production (PCL)	22/04/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,748,600
15	ONGC Videsh Ltd	27/04/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,671,800

16	Niger Delta Petroleum Resources Ltd	11/05/2015	Payment for 2nd Stage - 1 st Licensing round	\$20,000	59,707,000
17	Mubadala Petroleum LLC	19/05/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,525,785
18	Sasol Exploration and Production	19/05/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,607,000
19	Glint Energy LLC	20/05/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,500,800
20	Rapid African Energy (Pty) Ltd	20/05/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,500,800
21	Dragon Oil International Ltd	22/05/2015	Payment for RFQ - 1 st Licensing round	\$20,000	59,429,959
22	BRIGHTOIL Petroleum Uganda Limited	28/05/2015	Payment for RFQ - 1 st Licensing round	\$20,000	61,765,296
23	Swala Energy	12/06/2015	Payment for RFQ - 1 st Licensing round	\$20,000	62,797,400
24	Walter Smith Petroman Oil Limited	15/06/2015	Payment for RFQ - 1 st Licensing round	\$20,000	62,970,400
25	Armour Energy Limited	17/06/2015	Payment for RFQ - 1 st Licensing round	\$20,000	63,562,374
26	Tullow Ug. Operations Pty	29/06/2015	Payment for RFQ - 1 st Licensing round	\$20,000	64,491,400
27	SASOL Exploration and	10/09/2015	Sale of Data	\$501,000	1,824,556,830
28	Armour Energy Limited	17/11/2015	Sale of Data - Kanywataba and Karuka- Taitai data packs	\$117,860	400,280,781
29	Maersk Oil	09/12/2015	Sale of Data	\$492,850	1,662,683,688
30	ONGC Videsh Ltd	14/12/2015	Sale of Data - Ngassa and Turaco	\$236,450	797,690,084
31	SASOL	18/12/2015	Sale of Data - Ngassa	\$100,250	338,204,402
32	Oranto Petroleum Ltd	28/12/2015	Sale of Data - Ngassa	\$100,250	338,476,863

33	Niger Delta Petroleum Resources Ltd	24/12/2015	Sale of Data - Turaco, Ngassa, & Karuka-Taitai data packs	\$157,890	525,024,259
34	Swala Energy		Sale of Data - Kanywataba & Karuka- Taitai data packs	\$117,860	407,256,979
35	Glint Energy LLC		Sale of Data – Mvule	\$30,000	101,289,900
36	Waltersmith Petroman Oil Ltd	25/11/2015	Sale of Data - Karuka-Taitai & Turaco data packs	\$213,840	709,923,015
	TOTAL			\$3,236,829	10,642,522,081

3.2 Progress of Activities in the Midstream Petroleum Department

3.2.1 Land Acquisition for Refinery Development

The process of acquiring the 29 square kilometers of land in Kabaale Parish, Buseruka Sub-County, Hoima District for the Refinery and its attendant infrastructure continued during the period under review. Payment of the Project Affected Persons (PAPs) continued throughout the year. The total number of PAPs compensated at the end of the year was 2460 out of 2615 property owners who opted for cash compensation, which was about 94%.

The Ministry acquired 533 acres of land for construction of the resettlement houses and other social infrastructure for 93 property owners who opted for resettlement. The Ministry of Lands, Housing and Urban Development (MLHUD) completed the physical development plan and survey for the land in Kyakaboga, Buseruka, Hoima where the 93 PAPs who opted for physical relocation are to be resettled. Contractors to construct resettlement houses, schools and to rehabilitate the health centres were procured and construction works commenced. The review of designs for the resettlement houses and social infrastructure was completed by the supervising consultant. By close of the period under review, construction was at 35% of works.

Court case: Seven (7) of the PAPs who have not yet turned up for disclosure and four (4) for physical relocation sued the Government of Uganda in the Land Division of the High Court of Uganda in Kampala. The application for an interim order by the plaintiffs was dismissed with costs for lack of merit and they also withdrew their application for a temporary injunction. The hearing of the main suit is yet to be fixed. For smooth transition, the Ministry has continued sensitisation of the remaining Project Affected Persons (PAPs).

3.2.2 Selection of a Lead Investor for Refinery Development

Following Evaluation for the Final Offers for the selection of the Lead Investor that was completed in January 2015, RT Global Resources - led Consortium (Federation of Russia) was selected as the preferred bidder and SK Group - led Consortium (Republic of South Korea) as the alternate. The preferred bidder and GoU started negotiations on the key Agreements for the Refinery Project during the period under review. The First Round of negotiations with RT-GR led Consortium was held in March 2015. A total of 8 rounds of negotiations were held between the Lead Investor and the Government of Uganda (GoU) during the year 2015. The agreements include; (i) Project Framework Agreement, (ii) Implementation Agreement, (iii) Shareholders Agreement.

3.2.3 Development of Pipelines and Storage Facilities

3.2.3.1 Uganda National Strategy and Plan for Transportation and Storage

The Ministry contracted a Consultant Dr. Benard Kariko Buhwezi of Makerere University on 18th September 2015 to review the Uganda National Strategy and Plan for Transportation and Storage undertaken by Worley Parsons to the required Government format. This assignment was completed in December 2015. By the end of 2015, a Cabinet Memo was being developed for submission to Cabinet for approval before implementation commences.

3.2.3.2 Development of Hoima-Kampala Multi-products Pipeline

A 205 km long, 10 inch diameter pipeline is planned to be developed to transport refined products from Hoima Refinery to Kampala, Buloba terminal. The development of a refined multi-products pipeline from the refinery to a distribution terminal in Buloba, West of Kampala is part of the refinery development project to be undertaken by Government and the Refinery Lead Investor.

The Ministry contracted M/S Ramboll Denmark in association with Newplan Limited in June 2015 to undertake detailed route survey and environmental baseline study for Hoima-Kampala multi-product pipeline. The kick-off meeting between the Consultant and the Government was held on Thursday 18th June 2015. The consultant presented the Inception Report to Government on 18th June 2015. The Conceptual Design Report was presented to Government on 15th September 2015. The interim report was presented to Government on 14th December 2015. Topographic Surveys commenced and the study is expected to be completed early 2016.

3.2.3.3 Undertake RAP and its implementation study for the multi products pipeline from the refinery (Hoima) to the Buloba terminal

The Ministry engaged the Consultant Strategic Friends International (SFI) to undertake Resettlement Action Plan (RAP) Study and its Implementation. The study commenced on 22nd October 2015 with a kick off meeting and inception report was presented on 4th December 2015. The study will last 24 months.

3.2.4 Development of the Crude Export Pipeline

The crude export pipeline is proposed to be developed as part of the Northern Corridor Infrastructure Projects by the East African Community (EAC) Partner States of Uganda, Kenya and Rwanda. The Partner States contracted Toyota Tsusho Corporation from Japan to carry out a Feasibility Study and Preliminary Engineering Design of the crude oil export pipeline was completed in June 2015. The revised final report was presented to the PSC on 3rd June 2015. The final report from TTC advised that both Hoima-Mombasa and Hoima-Lokichar-Lamu were technically feasible and did not recommend the optimal route.

As a result the contract with TTC was extended to carry out the comparative analysis of the two routes on the like to like basis and recommend the most economic and optimal route for the pipeline. The comparative analysis by TTC recommended Hoima-Lokichar-Lamu route. The recommendations raised concern among the stakeholders that key issues which were raised in the final report such as lack of access infrastructure, high storage capacity at Lamu due to effects of monsoon winds, and security risk in the northern part of Kenya were not adequately addressed by the study. Following the above challenges an alternative route through Tanzania was evaluated. A Memorandum of Understanding was signed between government of Tanzania and Uganda on evaluation of the route through Tanzania on 12th October 2015.

A detailed feasibility study for Tanga route has been completed and confirms that the route is technically feasible, given that Tanga port is sheltered from monsoon effects and the constructability

challenges are reduced as the pipeline is routed along the existing infrastructure among others. A Joint Technical Team comprising of GOU (MEMD), CNOOC, TOTAL and Tullow was put in place to carry out a comparative analysis of the three routing options and select a least cost/tariff route for Ugandan Crude to the East African Coast. The report is expected to be completed in February 2016 to allow Government of Uganda make a decision on the least cost route for Uganda's crude.

3.2.5 Development of Crude Oil Feeder Pipelines to the Refinery

Feeder pipelines are to be constructed from the Buliisa Central Processing Facility (CPF) in the North and the Bugoma CPF in the South to a Central hub near the refinery in Kabaale. Stakeholder engagement meetings were held in 29 villages along the 47.87 km pipeline route from Kabwoya to Kabaale Refinery area. The engagements were aimed at sensitising the communities about the Rapid Asset Survey (RAS) which would be carried out within a 2 km corridor. The Kingfisher Development Area (KFDA) feeder pipeline Rapid Asset Survey (RAS) study commenced on June 19th, 2015 and was completed in December 2015. Total E&P and Tullow Uganda Operations Ltd procured a consultant to undertake a Resettlement Action Plan (RAP) study for their land requirement including the feeder pipeline from the Central Processing Facility (CPF) in Buliisa. Pre-RAP phase has been done for the pipeline.

3.2.6 Development of an Airport at Kabaale

The Ministry of Energy and Mineral Development in conjunction with Ministry of Works and Transport and Civil Aviation Authority are taking forward the development of a master plan and detailed engineering design for phase 1 (excluding a control Tower and Terminal Building) for an Airport at Kabaale, Hoima. The Terms of Reference for consultancy services for the assignment were developed in consultation with International Civil Aviation Organization. The Master plan was developed and recognizing that this is a living document, it can be revised from time to time. The consultant completed 65% of the detailed design which was reviewed during the year under review and is expected to submit 95% by end of January 2016.

3.2.7 Development of the Oil and Gas Industrial Park

The Government of Uganda has planned for the development of an industrial park at the refinery project area. In addition to the refinery, the Park will accommodate; an International Airport, export hub, energy Based industries, Petrochemical Industries and other associated facilities. Procurement of a consultant to develop a Master Plan for the Industrial Park is still on-going.

3.2.8 Legal and Regulatory Framework

3.2.8.1 Formulation of regulations for Midstream operations

The National Content regulations, the General Midstream regulations and HSE regulations were submitted for the Minister's signature and later gazetting as well as issuance.

3.2.8.2 Development of Standards for Midstream operations

The process of developing standards for Midstream petroleum operations has progressed and by the end of the year under review, a number of standards had been developed. The Technical Working Group on Refining and Transportation developed about 40 draft Uganda standards. These Standards were approved by the National Council of Standards in December 2015. The Midstream Petroleum Department continues to develop more Standards for the Midstream operations.

3.3 Petroleum Supply, Infrastructure and Regulation

The key policy objective in Uganda's Downstream Subsector, as spelt out in the Energy Policy for Uganda (2002), is: To ensure adequate, reliable and affordable supply of petroleum products at internationally competitive and fair prices within appropriate Health, Safety and Environmental (HSE) standards. The implementation of this policy objective is spearheaded by the Petroleum Supply Department (PSD) as provided for under the Petroleum Supply Act, 2003. In this section, the Downstream Subsector gives an update on performance progress for the calendar year 2015.

3.3.1 Monitoring and Inspection

PSD undertook quarterly monitoring and inspection of Petroleum outlets in the whole country. Monitoring and inspection aims at ensuring that the downstream subsector is well regulated as far as health, safety, environment, fair competition, standards and good business practices are concerned. During the year under review, a total of 530 outlets were inspected in major business centres in the following districts:-

- i) 1st quarter (January to March) 2015: Wakiso, Kole, Gulu, Lira, Oyam, Pader, Kitgum, Masindi, Kiryandongo, and Nakasongola.
- ii) 2nd quarter (April to June) 2015: Pakwach, Nebbi, Arua, Yumbe, Koboko, Moyo, Adjumani and Kampala.
- iii) 3rd quarter (July to September) 2015: Mukono, Kayunga, Buikwe, Luuka, Mayuge, Jinja, Kamuli, Bugiri, Mayuge, Iganga, Budaka, Bukedea, Mbale, Sironko, Bulambuli, Soroti, Kapchorwa, and Kumi.
- iv) 4th quarter (October to December) 2015: Mubende, Mityana, Kibaale, Kyenjojo, Kabarole, Kasese, Rubirizi, Bushenyi and Mbarara.

3.3.1.1 Main Objective

The major objective of monitoring and inspection of petroleum facilities and operations of the petroleum supply industry is to provide the necessary checks and balances required for ensuring that the industry practice is competitive, standardized and fairly regulated in accordance with the Petroleum Supply Act (2003) and the Petroleum Supply (General) Regulations (2009).

3.3.1.2 Specific Objectives

- i) To check the level of compliance to the licensing requirements.
- ii) To ascertain the extent to which the petroleum facility constructions meet the minimum set facility standards (US 947-1).
- iii) To establish whether the previous inspection recommendations were adhered to.
- iv) To ascertain whether facilities comply with safety, health and environmental standards.
- v) To collect information that is vital for National Petroleum Information System.
- vi) To ascertain the level of safety awareness of the personnel involved in the industry, third parties and the facilities.
- vii) To verify whether the licensed companies adhere to periodic regulations and petroleum standards.
- viii) To find out the level of stocks vis-à-vis the standard stocking requirements.
- ix) Sensitise the operators on adherence to licensing, environment, safety, health and business and standard requirements.

3.3.1.3 Methodology

The methodology adopted for the monitoring exercise was interviewing and observation to find out the following: records/book keeping, Health, Safety and Environment (HSE), compliance with other regulatory authorities like NEMA and Local Authorities, stock levels, housekeeping, compliance to

facility standard US 947-1 and possession of the necessary licenses and permits as required by the Petroleum Supply Act (2003). This was done following an in house checklist designed by the Petroleum Supply Department (PSD).

3.3.1.4 Summary Findings of monitoring and inspection 2015

Below is the summary finding from the monitoring and inspection that was carried out in selected parts of the country on quarterly basis during 2015.

Table 15: Results of the field monitoring in selected parts of the country

	Facilities	1 st quarter	2 nd quarter	3 rd quarter	4 th quarter
1	Inspected	110	118	169	133
2	Without oil interceptors	63	30	109	73
3	With calibrated pumps	110	118	169	133
4	Operated by safety trained staff	78.2%	87.2%	79.3%	82.7%
5	Without petroleum operating license	29	48	58	66
6	Lacking annual environment audit	108	79	05	129

3.3.2 Enforcement

During the year, the enforcement to compliance with petroleum laws and standards was conducted in Eastern, South-Western, Central and Western Uganda districts. From January to March 2015, an enforcement exercise was carried out in the districts of Ntungamo, Kasese, Kabarole, Kampala and Wakiso and particularly was following up a court case on a revoked license. In the months of April to June 2015, the exercise was carried out in the Western Region districts of Hoima, Kibale, Kasese, Kisoro, Kyenjojo, Ntungamo, Mitooma, Bushenyi, Isingiro, Kabarole, Masaka, Mbarara, Rukungiri and Rubirizi. In the period July to September 2015, the exercise was farther carried out in Eastern Uganda region covering the districts of Budaka, Bugiri, Buikwe, Iganga, Jinja, Kaliro, Kamuli, Kayunga, Kibuku, Luuka, Mayuge, Mbale, Mukono, Namayingo, Wakiso, and Tororo. While the period from October to December 2015, enforcement was carried out in Central Region covering Kampala area, Masaka road and some parts of Wakiso districts.

3.3.2.1 Objectives of Enforcement

The main objective of enforcement of the Petroleum Supply legislation is to ensure compliance with the regulatory framework governing the petroleum supply operations and to ensure that petroleum supply operators are accountable and transparent. The other objective is to ensure public safety and protection of public health and the environment in all petroleum supply operations and installations. Prior to coming into force of the Petroleum Supply Act (2003), the construction and operations of the petroleum facilities such as filling/service stations were licensed by Local Governments.

Even, after the enactment of the Petroleum Supply (General) Regulations in December, 2009 many petroleum supply operators entered the industry without following the regulatory framework put in place. The other policy objective of the downstream subsector is to promote fair competition in the petroleum supply and marketing industry in Uganda so as to minimize on potential dangers associated with the industry by streamlining operators and fuel facilities. The existence of unlicensed facilities and petroleum operators alongside bona fide facilities and petroleum operators cause unfair competition in the subsector.

3.3.2.2 Implementation Approach

During the Monitoring and Inspection exercise, operators were informed of the need to comply with the law and regulations in the areas of concern which the operators needed to address. After multiple visits were made, a report on illegal operators was compiled and the enforcement operations commenced. The enforcement exercise was undertaken following national stakeholders' workshops on petroleum regulations and Standards sensitization workshops that were held between March and June 2015 in Eastern, Western and Northern regions of Uganda. The sensitized stakeholders and local leaders of the respective areas showed support of the Ministry's' initiative to clean the subsector. The local leaders were briefed about the enforcement exercise that was to follow the sensitization that had taken place in their respective districts.

In 2015, the enforcement targeted retail facilities of operators that had not heeded to the requirements of the Petroleum Supply Act, 2003. These were mainly operators that had not been licensed or applied for the license or construction permits by the time of inspection. Secondly, the team was also following up on the petroleum retail facilities that had failed on the marker level test as reported by the Fuel Marking and Quality Monitoring Program (FMP). Those retail units that had failed on the test were followed and reported to domicile Police for close monitoring of their operations. The operator who had taken government to court lost the case on appeal and was to re-apply for licensing and forced to comply with the Petroleum laws and standards.

3.3.2.3 Enforcement Action

During the year, enforcement activities covered all regions of Uganda save for Northern Uganda as shown below.

Table 16: Summary of enforcement activities in the regions of Uganda

SN	Period	Region/Districts	Retail Units enforced on
1.0	January-March 2015	Mainly followed up a court case while ensuring the territorial police were deployed at the stations of the concerned company in the districts of Wakiso, Kampala, Kasese, Kabarole and Ntungamo.	The court case was determined in favor of Government and the company is still in the reformation process to comply with the Petroleum laws and standards before it can be re-licensed.
2.0	April-June 2015	Enforced in Western Uganda	70 retail petroleum facilities were enforced on in the region, out of which 58 had their tanks closed for lack of Petroleum Operating Licenses
3.0	July-September 2015	Enforced in Eastern Uganda	82 retail petroleum facilities were enforced on. Default notices to licensed companies who failed the marker level test were issued. 61 facilities had their tanks sealed while others undergoing construction were halted.
4.0	October-December 2015	Enforced in Central Region	46 petroleum retail facilities were involved. 8 facilities had de-commissioned as a result of previous enforcement action, while 19 had their tanks sealed pending prosecution if they

			do not de-commission. 6 facilities were non-operational and others had documents indicating that they were advancing towards acquiring licenses.
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3.3.3 Sensitisation Workshops

3.3.3.1 Introduction

The workshops for Western, South Western and Eastern Uganda regions were organised by PSD and were held at Hoima Resort Hotel, Lake View Resort and Mbale Resort Hotels in the towns of Hoima, Mbarara and Mbale respectively. The purpose of the workshops was to sensitise the stakeholders about the downstream petroleum legislations and retail facility standards and activities of PSD. The participants comprised of petroleum operators and representatives from the Local Governments responsible for approving the development of petroleum facilities in their respective areas.

3.3.3.2 Objectives of the workshops

- i) To ensure smooth collaboration between MEMD and the local governments in ensuring compliance with the regulatory framework governing the petroleum supply operations and hence enhance transparency and accountability of petroleum supply operations.
- ii) To sensitise participants about petroleum regulations and standards in order to create mass awareness and hence bring about a trickle-down effect as a result of the local governments added benefit of monitoring their areas on behalf of MEMD, and in full knowledge of the regulations and standards governing petroleum operations.
- iii) To ensure awareness of public safety, protection of public health and the environment in all petroleum supply operations and installations. Safety in handling and proper disposal of petroleum products was re-emphasised.



Fig. 30: Workshop at Mbale Resort Hotel



Fig. 31: Petroleum Standards and Regulation sensitisation Workshop in Hoima Town

3.3.4 National Petroleum Information System

3.3.4.1 Petroleum product import volumes for calendar year 2015

The petroleum import trends for 2015 were fairly stable with maximum import figures recorded in July (157,968,041 litres) and minimum figures imported in June (135,335,958 litres). The average monthly import figure for the whole year was 146,899,308 litres. The import volumes were also low in September but recovered with reasonably higher than average imports in October and November. The inconsistency in the import volumes is usually due to delays in transporting the petroleum product from the coast, through Kenya to Uganda.

Table 17: Average 2015 monthly Petroleum import volumes (litres)

	PMS	BIK	AGO	JET A1	TOTAL
Jan-15	62,861,161	5,694,901	66,189,215	11,134,936	145,880,213
Feb-15	62,397,963	4,773,857	67,609,557	12,224,022	147,005,399
Mar-15	57,682,941	6,683,105	65,276,933	13,212,475	142,855,454
Apr-15	59,581,798	4,781,007	63,518,126	10,995,541	138,876,472
May-15	70,029,203	4,306,910	66,596,732	14,449,242	155,382,087
Jun-15	56,755,371	4,124,082	64,890,742	9,565,763	135,335,958
Jul-15	66,681,441	4,139,586	73,145,508	14,001,506	157,968,041
Aug-15	59,464,255	6,525,498	70,801,882	14,315,251	151,106,886
Sep-15	57,880,173	5,337,909	61,889,731	10,685,497	135,793,310
Oct-15	67,842,563	4,480,715	69,206,914	8,428,220	149,958,412
Nov-15	62,331,954	5,374,968	72,543,376	13,417,770	153,668,068
Dec-15	70,889,100	4,123,155	66,103,651	7,845,489	148,961,395
TOTAL	754,397,923	60,345,693	807,772,367	140,275,712	1,762,791,695

3.3.4.2 Average crude oil prices for 2015 (in US\$)

International prices for crude oil were at their highest for the year during the months of May and June with US\$59.64 and US\$59.83 respectively. This was short lived as they reduced rapidly to US\$42.05 in August 2015. The last quarter of the calendar year 2015 began with a two week rise in oil prices due to an anticipated reduction of global crude oil production. The trend, however, did not last long and soon oil prices began to decline. The average weekly rate of decline for the quarter was 2% for Brent oil and 15% for WTI. By the second week of December, the prices of both benchmarks fell below US\$40

per barrel following OPEC's decision not to cut production. The market was characterised by abundant supply and reluctantly weak demand.

Table 18: Average monthly crude prices for 2015 (US\$/bbl)

	OPEC	Nymex (WTI)	Brent (ICE)
Jan-15	47.42	49.74	47.11
Feb-15	50.64	58.16	54.79
Mar-15	47.64	57.03	52.83
Apr-15	53.98	60.65	57.54
May-15	59.64	66.24	62.51
Jun-15	59.83	64.93	61.31
Jul-15	52.53	57.66	54.34
Aug-15	42.05	46.96	45.69
Sep-15	45.56	48.64	46.28
Oct-15	45.86	48.87	46.96
Nov-15	40.47	46.48	43.11
Dec-15	31.63	37.35	36.57

3.3.4.3 Average monthly Petroleum pump prices for 2015

Petroleum pump prices for calendar year 2015 in Uganda were fairly stable with averages of 3,597; 2,600; and 2706 for PMS, BIK and AGO respectively. The highest prices of the year were recorded in January with PMS at US\$ 1.30, BIK at US\$0.98 and AGO at US\$1.12. The lowest prices were in September and October because of the very high petroleum product volumes that had been imported in the previous months. The low international price for crude contributed to the reduction of the prices in December 2015. Overall, prices are largely determined by the fluctuating dollar exchange. The table below compares prices in Uganda shillings and US dollars.

Table 19: Average monthly pump prices of Petroleum products for the year 2015

	Prices per litre (UGX)			Exchange	Prices per litre (US\$)		
	PMS	BIK	AGO	Rate	PMS	BIK	AGO
Jan	3,700	2,800	3,200	2,856.74	1.30	0.98	1.12
Feb	3,600	2,700	3,050	2,868.91	1.25	0.94	1.06
Mar	3,550	2,850	3,050	2,952.14	1.20	0.97	1.03
Apr	3,450	2,650	2,800	2,994.40	1.15	0.88	0.94
May	3,650	2,650	2,950	3,003.10	1.22	0.88	0.98
Jun	3,463	2,453	2,807	3,191.05	1.09	0.77	0.88
July	3,641	2,523	2,941	3,372.42	1.08	0.75	0.87
Aug	3,573	2,523	2,844	3,546.54	1.01	0.71	0.80
Sept	3,605	2,514	2,837	3,667.86	0.98	0.69	0.77
Oct	3,695	2,514	2,849	3,640.49	1.01	0.69	0.78
Nov	3,695	2,514	2,809	3,443.78	1.07	0.73	0.82
Dec	3,541	2,514	2,735	3,363.18	1.05	0.75	0.81

3.3.5 Petroleum Standards

Standards development and enforcement for the downstream subsector continued to progress well in collaboration with Uganda National Bureau Standards (UNBS). The Technical committee on Petroleum (TC 16) has continued to hold meetings for the development of standards. A number of

standards have been gazetted by the Standards Council since the start of their development. In the year under review, the subcommittee on petroleum facilities and products (downstream) continued to hold meetings according to the business plan. Fourteen (14) Standards were completed and are awaiting approval. Five (5) drafts were produced and are ready for discussion by the Technical Committee (TC). In addition, sixteen (16) new work item proposals were approved for development.

3.3.6 Licensing

During the reporting period, the Department continued to streamline the licensing regime under the Petroleum Supply Act 2003 and General Regulations of 2009. In the same period, a total of forty six (46) companies were issued with Petroleum Operating Licenses and sixty one (61) Petroleum Construction Permits were issued. The operating licenses were importation, wholesale and retail for different operators in the country. From the licensing activity (operating licenses and permits), the Department generated Non Tax Revenue (NTR) of UGX 139,705,308 (One Hundred Thirty Nine Million Seven Hundred Five Thousand and Three Hundred Eight Shillings).

In addition to the above one hundred thirteen (113) Environmental Impact Statement reports and fifteen (15) Environmental audits were reviewed and recommended to the National Environmental Management Authority (NEMA) for approval and six (6) were rejected. The Department started using the National Petroleum Information System in the licensing process starting with receiving of the application, approvals, evaluation, fees assessment and insuring of Permits and operating license. The system tracks application at various stages of processing it and where the delays are experienced can be identified and resolved. The system will be upgraded to accommodate the areas for improvement.

3.3.7 Quality Assurance

The main objectives of this aspect are to ensure that the petroleum products imported and distributed in the country are of adequate quality. In addition, this ensures consumer and environment protection and the industry is well regulated as far as fair competition and standards as provided for in Petroleum Supply Act 2003, the General Supply regulations of 2009 and the Petroleum Marking and Quality Control Regulations 2009 as amended in 2012. During the reporting period, the Department continued to implement the Fuel Marking and Quality Monitoring Program. The Fuel Marking and Quality Monitoring Program (FMQP) is a government initiative implemented under a memorandum of understanding between Ministry of Energy and Mineral Development (MEMD) and Uganda National Bureau of Standards (UNBS) in collaboration with Oil Marketing Companies (OMCs). It is guided by the Fuel Marking Regulations 2009 which was amended in 2012.

Its major aim is to control the quality of petroleum products and protection of government revenue in order to protect the market and curb malpractices arising from fuel adulteration, smuggling and dumping. While adulteration has a direct impact on product quality, dumping and smuggling impact greatly on loss of government revenue but also have the potential of affecting product quality due to the unregulated handling process. The FMQP provided a foundation for an effective quality monitoring system by:

i) Offering consumer quality assurance and protection of products at the final dispensing outlet; and
ii) Monitoring the quality of imported products to ensure that all products meet required standards. Under the FMQP, the service provider M/s GFI International is responsible for marker doping at the boarder posts whereas UNBS and MEMD are in charge of quality monitoring of fuel imports. The Quality Assurance unit handles various samples, which are routinely drawn from the border entry points, field monitoring, Donor samples from retail stations or depots, Donor samples from individuals, and from commercial consumer sites are for investigative purposes from other Government agencies.

Table 20: The summary of samples tested in the Central, South Western, Northern-West, Western and Eastern regions

	2015 Monitoring Results
Total Number of outlet/ stations in the country Involved	1,969
Number of samples tested in the field	26,817
Number of samples tested in the central laboratory	13,426
No of samples that passed	23,622
No. of sample that failed the test	3,195
No. Of Stations Visited But Found Without Fuel	237
No. Of Station that were sealed	195
Percentage average coverage for the entire county	82%

The program received a new XRF 118013 in December 2015 which enhanced capacity in monitoring and testing of petroleum products. The mobile laboratory vehicles have been fitted with a new GPS tracking system, which helps in the supervision operation at any point in time. The failure rate declined on average from 3% to 1.3% in the reporting period. Because of this intervention, the import volumes increased to an average of 135 million liters of white products excluding Jet-A1 per month from an average of 95 million liters per month in 2012. This translates in the same proportion an increase in government revenue. Other achievements under the Quality Assurance program were: -

i) the procurement of a fully automated distillation apparatus for Busia and Malaba border entry ports; and

ii) the development of petroleum quality manuals and standard operating procedures; and HSE User Manuals. The final report and manuals have been submitted by the respective consultant pending review and adoption by the department. In addition, some staff members under the Quality Assurance Unit obtained training in the ISO 9001 Quality Management Systems in August 2015.

3.3.8 Jinja Storage Tanks (JST)

3.3.8.1 Monitoring of Concession Agreement

During the year 2015, the Ministry monitored and supported the operator-Hared Petroleum Limited in management and operating Jinja Storage Tanks. Through the Ministry intervention, together with National Water Sewage Corporation and Jinja Municipality, sewer spillage into the tank farm was corrected. The department of Petroleum Supply continuously monitored stocks movement at the facility and collected concession fees. Operational and maintenance activities were also monitored for compliance with industry standards and best practices. The table below shows the stocks inventories at JST during the year 2015.

Table 21: Stock inventories at JST during the year 2015

Month	Products in		Products out		Closing stock		Monthly Closing average
	PMS	AGO	PMS	AGO	PMS	AGO	
Jan	347,453	769,208	408,150	778,778	265,444	481,660	747,104
Feb	554,136	554,601	450,527	567,742	319,365	468,519	787,884
March	484,780	800,793	484,863	799,614	319,282	469,698	788,980
April	416,594	614,307	519,918	788,622	21,5951	511,341	727,292
May	660,994	615,887	591,024	583,482	285,928	327,788	613,716
June	521,851	523,709	545,438	502,206	262,341	349,341	611,682

July	692,351	678,044	532,030	637,908	422,662	389,427	812,089
August	139,146	678,417	340,148	598,511	221,660	469,333	690,993
Sept	312,060	215,796	343,322	480,808	190,398	204,321	394,719
Oct	520,271	739,386	459,961	645,243	250,708	298,464	549,172
Nov	416,306	1,660,410	359,796	522,693	307,218	1,436,181	1,743,399
Dec	450,435	184,392	541,818	628,700	215,835	991,873	1,207,708
Total	5,516,377	8,034,950	5,576,995	7,534,307	3,276,792	6,397,946	9,674,738

3.3.8.1 Construction of a Perimeter Wall Fence

To enhance security at JST, the ministry procured Landmark International Limited to construct a perimeter wall fence around the facility and provide parking. Construction started in May 2015 and 90% of the work had been executed by December 2015. When completed, the fence will reduce the possibilities of undetected intrusion into the facility and protect the surrounding facilities against any fire outbreak at the facility.



Fig. 32: Fence at JST under Construction

3.3.9 Development of Nakasongola Strategic Fuel Reserves

Designs and Bills of Quantities for development of a 40 million litres storage facility at Nakasongola military barracks were produced during 2015. The Environment Impact Assessment study in respect to development of the site was also approved by NEMA. Procurement of Contractors for constructing and commissioning the facility did not commence due to inadequate financial releases. By December 2015, the Ministry was in discussion with Ministry of Defence for a better alternative of developing and managing the facility.

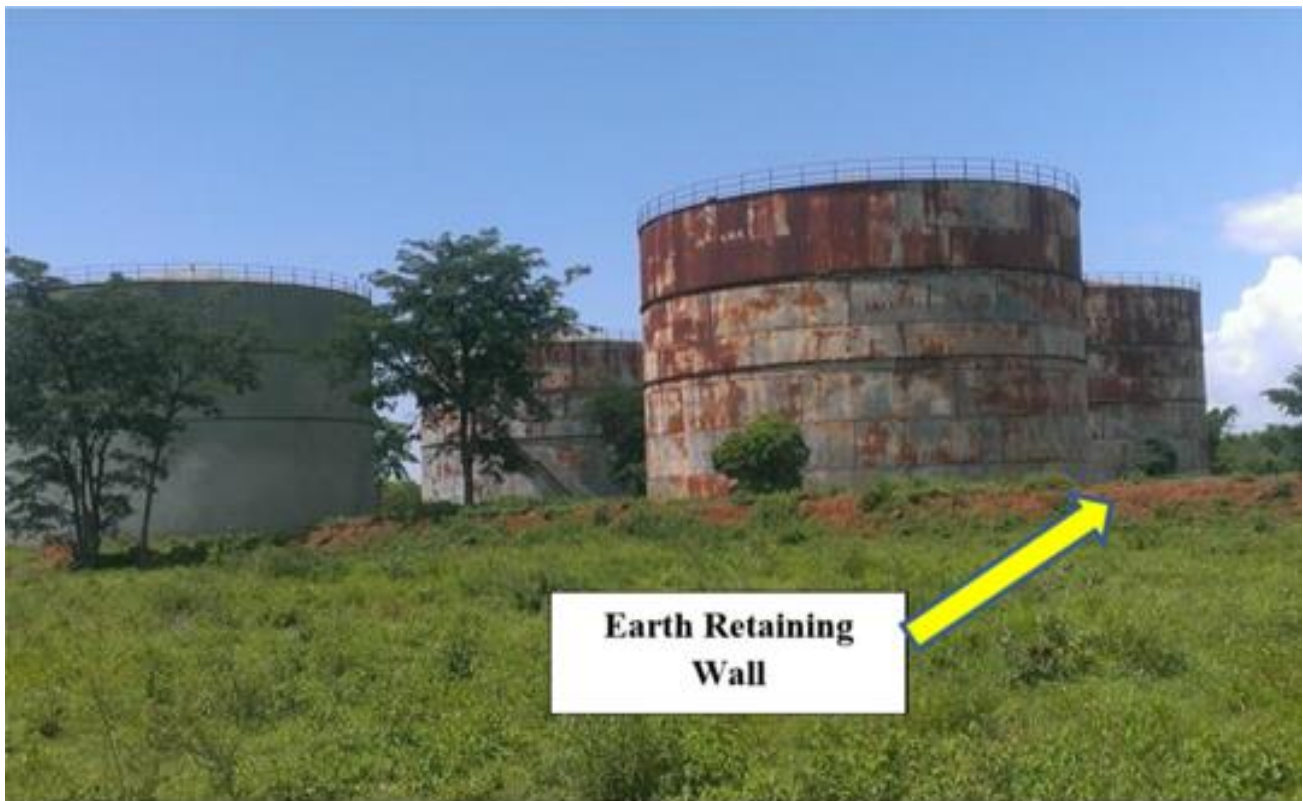


Fig. 33: Fuel Tanks at Nakasongola

3.3.10 Eldoret-Kampala Refined Petroleum Products Pipeline

3.3.10.1 Resettlement Action Plan (RAP) Data

During the year, the Ministry engaged consultancy services of Survesis to review and validate the resettlement action plan for Eldoret-Kampala refined products pipeline corridor from Malaba border to a proposed storage terminal at Buloba. By December 2015, the consultant had submitted an interim report. Once complete this will serve as a guide in compensating the affected persons along the corridor and transferring land ownership rights to government.

3.3.10.2 Procurement of Engineering, Procurement and Construction (EPC) Firms

In the previous year 2014, a shortlist for EPC prequalified firms for Eldoret-Kampala refined products pipeline under the Northern Corridor Integration Projects had been made. Issuing of Requests for Proposal to prequalified firms was halted pending Partner States' identification of source of funds. The status remained unchanged during the year 2015.

3.3.10.3 Buloba Multi User Terminal

Partial payments were made as compensation for acquiring Buloba Multi-user Terminal land and by end of December 2015, over 90% of the compensation had been made. The development of Buloba Petroleum Products Terminal Master Plan commenced in the year 2015. On 14th October 2015 the Ministry received submission for Expression of Interest in developing the Buloba Terminal Master Plan from eleven firms. By the end of December 2015, the evaluation to shortlist the pre-qualifying firms was ongoing.

4.0 THE MINERAL SUB SECTOR



E. KATTO
DIRECTOR/ DGSM



G. BAHATI
Ag. Commissioner,
Geothermal Dept



Z. BAGUMA
Ag. Commissioner,
Geological Surveys

The following key outputs were achieved during the year:

i. Continued implementation of Airborne Geophysical surveys and geological mapping of Karamoja region. At the time of the project closure in June 2015, 30% of the Karamoja region had been mapped and various mineral zones identified for further follow up.

ii. Commenced implementation of Mineral Wealth and Mineral Infrastructure development (MWAMID) project on 1st July 2015. The project supported geological surveys and mineral exploration activities at

(a) Ndale volcanic field, Fort Portal where an area of 160 km² has been delineated for further follow up;

(b) Iron Ore exploration at Rutenga, Kabale which confirmed the current existing iron ore anomaly and additional lenses beyond the current existing iron ore anomaly zones;

(c) Inspections and monitoring country wide, a total of which 40 inspections were conducted; (d) Sensitization of mining communities and ASMs on health and safety issues in mining.

Fig. 34: Management of GSMD

iii. Geothermal project: Continued with the detailed surface and subsurface studies of geothermal sites country wide. The studies revealed more wide spread surface manifestations for geothermal systems. Preliminary geological models have been developed and are to be tested, supplemented and refined by further fieldwork. The directorate procured MagnetoTelurics (MT) equipment for further exploration to image sub-surface geothermal reservoir

iv. The sector generated UGX 3.96 billion shillings as Non-Tax Revenue (NTR) from royalties and mineral license fees.

v. Continued monitoring of earthquakes and geotectonic activities in the country as well as maintaining geodata and information systems for mineral sector promotion.

4.1 Introduction

The mandate of the Directorate is to establish, promote, strategically manage and safeguard the rational and sustainable exploitation and utilization of the mineral resources of Uganda. During the year, the Directorate implemented three projects: The Airborne Geophysical Surveys that closed in June 2015, the Mineral Wealth and Mineral Infrastructure Development (MWAMID) project that

commenced in July 2015 and Geothermal Resources Project. During the period of reporting, the outputs achieved are captured under the following:

- a. Geological mapping and mineral resource assessment under Karamoja Project
- b. Mineral Wealth and Mineral Infrastructure Development Project
- c. Geothermal Resources Project-
- d. Geological Surveys
- e. Mines

4.2 Airborne Geophysical Surveys and Geological Mapping of Karamoja Project

During the last half year of the project implementation, the key outputs achieved included: Policy Formulation and Regulations; Capacity building, mineral exploration and development, promotion of investment in mineral resources of Karamoja; Health and Safety awareness by Miners, Inspections, and Monitoring of mining operations in Karamoja region as well as Improvement of infrastructure for mining projects.

i. Policy Formulation and Regulations

During the period under review the following were achieved:

- Stakeholders' consultative workshops continued in Moroto and Abim Districts to enable identification of key issues to be in the new Mineral Policy and Mining Legislation.
- Consultative meeting with KEMPSTAP Directors on development of communities in mining areas was held on 24th March, 2015. It was agreed that the two entities collaborate on formalization and development of small scale mining groups.
- The 7th Karamoja Policy Committee (KPC) Meeting under the Karamoja Integrated Development Program was attended on 20th February, 2015 by State Project Coordinator. Issues raised during the meeting included the need for: (i) training and provision of technical guidance to mining communities and (ii) establishment of Weigh Bridges in Karamoja region.
- Training and sensitization of Local Government Officials and small scale miners from Morulem, Abim District continued during the month of February 2015 in preparation for the formalization of ASM in Morulem Alluvium prospect.
- Continued sensitization of Local Leaders and communities in Abim district on mineral development and airborne geophysical surveys. In addition sensitization of stakeholders on matters pertaining to licensing and linkage of mineral wealth to social and economic development, occupational health and safety, social and environmental considerations were undertaken in the Sub-Counties of Amudat and Loroo in Amudat District; Lorengedwat, Lolachat, Kakomongole, Loregae, and Namalu in Nakapiripirit, Nakapiripirit District.



Fig. 35: Sensitization of Local Leaders and communities in Abim

- A Dialogue on Minerals Workshop with the theme ‘Know Your Rights, Mineral Legislation and Fiscal transfers’ was held in Mt. Moroto Hotel in Moroto Municipality on 12th May, 2015. A comprehensive presentation on Mineral Legislation, status of Mineral Policy Review, status of mineral concession in Karamoja and fiscal/revenue transfers to the sub-national level was made by Mr. John Kennedy Okewling (Mining Engineer). Copies of the fiscal/revenue transfers, concession list and map were disseminated to participants.



Fig. 36: Dialogue on Minerals Workshop in Mt. Moroto Hotel, Moroto Municipality

- Consultative meeting with Karamoja Small Scale Miners Association Officials was held in Moroto on community participation in mining investment in the region during May, 2015. It was emphasized that exploration companies should create awareness about their activities to the communities and put in place measures that support the social and economic development
- Trained Morulem Gold Mining Group leaders in license management to enable them to comply with the term of Location License that was applied for.

ii. **Capacity building**

The Directorate continued to enhance capacities of staff in records management and Business Administration respectively, where two members of staff were trained. Another lot of Twenty Eight (28) Senior Technical staff from the Directorate of Geological Surveys and Mines and Twenty Five (25) participants from Water Department, Lands, Forestry, CSOs, Uganda Bureau of Statistics, World Bank, PROBICO, AfDB, among others, attended a training course on Socio-Economic Benefit Optimization in Mining. The Training Course was organized by The Directorate of Geological Survey and Mines of Uganda (DGSM) and the International Institute for Sustainable Development (IISD) from 2nd to 4th February, 2015. The training addressed strategies for optimizing the social and economic benefits of mineral development in Uganda, Mine Closure and Post-Mining Transition.

Training Needs Assessment was undertaken under the Karamoja Project and the the following training needs have been identified, namely:

- LG Officials, Police and DISOs require training on management of mineral resources: policies, laws and regulations, mineral resources potential, taxation, royalties, expectations and occupational safety and health and environmental protection;
- Community and Opinion Leaders requires training on: policies, laws and regulations, mineral resources potential, taxation, royalties, expectations and occupational safety and health and environmental protection;

- ASMs in best mining practices, business skills, management of organizations; policies, laws and regulations, mineral resources potential, taxation, royalties, expectations and occupational safety and health and environmental protection;
- Technicians require skills in welding to fabricate and repair equipment;
- Provide career guidance to educational institutions to encourage them to undertake training and specialize in geology, mining engineering, metallurgy and mineral development to participate in the management of the mineral resources of Karamoja.

iii. Mineral Exploration and Development

(a) Regional stream sediment survey of sheet 25/1(Alerek)

The project supported the geochemistry team in the field. The team undertook regional stream sediment survey of sheet 25/1 (Alerek) in Abim and Agago Districts. Sixty seven (67) stream sediment samples including two duplicates and two (2) rock samples were collected.

The samples were submitted to the mineral dressing laboratory for sample preparation. The stream sediment samples will be dried, demoulded and sieved while the rock samples will be crushed pulverized. The samples will then be sent to the assay laboratory for analysis. The geochemical index map of Uganda is being updated to include the recent geochemical surveys by the Ministry and private companies.

(b) Geophysics exploration over Nakiloro Chromite anomaly

- The magnetic survey has been able to clearly identify the chromite–platinum occurrences due to the difference in the magnetic susceptibilities between the ore and the surrounding host rock.
- Visible chromite – platinum ores are massive dark rocks of varying coarseness and composed entirely of chromite-platinum granules set in a ramifying network of thin veins. The rocks generally have a bluish sheen. The ground magnetic survey did not ascertain the extent of the chromite–platinum mineralization.
- There is a big density contrast between the chromite ore and host banded amphibolites. This justifies the need to undertake a thorough gravity survey on the prospect to delineate its extent.

iv. Promotion of Investments in Karamoja Region

- Information on geological and mineral resources of Karamoja, was provided to the public. This included information on Gold in Nyakware and Ongorom.
- Investment in the mineral resources of Karamoja was promoted during the Mining Indaba Convention in Cape Town, South Africa as well as Prospector and Developers Association (PDAC) in Toronto, Canada. Over 600 investors and interested persons visited the Ugandan booth and interacted with the delegates.
- Information regarding specifications of the airborne geophysical surveys of Karamoja was provided to the Ministry of Finance, Planning and Economic Development and Office of the Prime Minister.

v. Health, safety and social awareness of Miners

Profiling of Artisanal Mining Operations in Kaboong District was undertaken with the aim of identifying areas of technical assistance so as to come up with strategies for value addition and ensure that mineral resources are sustainably exploited. Four (4) artisanal gold mining sites were visited namely: Nabukoret River, Lopedo, Gores and Morulem. The operations were found to be labour intensive,

rudimentary and environmental, health and safety concerns are often neglected. Health and Safety materials extracted from the Handbook on Small Scale Mining and mainstreaming gender and climate change in mining areas were disseminated. This was phase III of the exercise to undertake an appraisal of mining operations for value addition and sustainable processing in Karamoja Region. The first phase covered location licenses held by Sikander Meghani, Jan Mangal (U) Ltd mining operation, artisanal operations in Rupa Sub-county, and Dao Africa Ltd marble quarry, all in Moroto District. The second phase covered artisanal operations in Karita in Amudat District and Moruita and Acherere in Nakapiripirit District.



Fig. 37: Left-Miners inside a trench excavation at Lopedo; Right-Excavations at Lopedo artisanal mining site with some of the miners on site.



Figure 38: Left-Women crushing and grinding ore within a manyatta in Lopedo; Right-Accessories for gold panning i.e. small pit dugout, jerry-cans and basins.

The target for the third phase of the profiling exercise was ten (10) artisanal gold mining operations in Kaabong District, however, the team visited only four (4) operations since it was a dry season and most of the other operations were dormant. The artisanal mining sites visited included: Nabukoret River, Lopedo, Gores, and Morulem. On a site by site basis the findings of the team were as follows:

- Security Risk Assessment was carried out to monitor security situation of the region that has been bogged with cattle rustling among tribal groups, illegal possession of fire arms and intermittent robberies especially on highways. It was observed that the region still requires caution on security matters. Close collaboration with security operatives in Karamoja is recommended to guard life and property. The situation is fair and does not affect implementation of Government programs.
- Profiling of Artisanal Mining Operations in Kaboong District was undertaken with the aim of identifying areas of technical assistance so as to come up with strategies for value addition and ensure that mineral resources are sustainably exploited. Four (4) artisanal gold mining sites were visited namely: Nabukoret River, Lopedo, Gores and Morulem. The operations were found to be labour intensive, rudimentary and environmental, health and safety concerns are often neglected and security in the area has improved.

vi. Licensing and inspections

The Project supported the Inspectorate of Mines at DGSM to carry out monitoring and inspections of exploration and mining activities in Karamoja region. John Kennedy Okewling, Mining Engineer (O/C Karamoja) carried out general inspections at Kosiroi in Tapac Sub-County and Ratha in Moroto District and M/S Tororo Cement Limited. It was established that overloading of trucks with Marble transported to Tororo Cement Plant in Tororo District still persists.



Figure 39: Overloading trucks with marble at Kosiroi, Moroto District.

Inspections of M/S DAO Marble Limited revealed that the company employs mostly foreigners at the mine in key posts. Ugandans employed are as cooks, helpers, casual labourers and a driver though the In-charge of welfare operations at the mine is a Ugandan.

vii. Government Buildings and Administration infrastructure

The draft architectural designs and bill of quantities (BoQs) for Karamoja Regional Office was developed by the MoW&T, reviewed by DGSM and returned for finalization. The BoQs have been finalized. The Seismological Unit carried out maintenance of earthquake monitoring stations installed at Kilembe, Mbarara and Entebbe. The Existing National Earthquake Information was updated to improve the mapping of tectonic zones in the country. The processing of the collected waveform data and archiving was done in order to produce electronic earthquake bulletins. The unit also carried out testing of seismic equipment in preparation for installation of new seismic stations.

The unit carried out literature review and held consultations with Oil Companies in preparation for the drafting of an agreement between the Companies and the Government of Uganda for the installation and operation of a passive seismic network in the Albertine Graben. This arrangement is meant to support the sustainable management of infrastructure in the Albertine region.

viii. Challenges to the progress of Karamoja Airborne Geophysical Survey

- The state of the Karamoja roads during wet season remained a big challenge in the sensitization program.
- Financing of airborne geophysical surveys has not been secured.
- Delays in release of funds caused delays in implementation of the project activities.
- Karamoja is a hard to reach and to live area; as such staff incentives are required to keep the working morale of officers.
- Lack of harmony between the mining Laws and regulations versus the land tenure systems pose a challenge.

4.3 Mineral Wealth and Mineral Infrastructure Development (MWAMID) Project

The Mineral Wealth and Mineral Infrastructure Development (MWAMID) Project commenced on 1st July 2015 with the aim to: (i) strengthen the mineral sub-sector in the areas of mining legislation, (ii) facilitate mineral assessment, (iii) strengthen analytical laboratories, (iv) Human Resources Development, (v) Procurement of specialized equipment and tools for acquisition and management of geo-scientific data. During the year, the following were achieved:

i. Policy Formulation and Regulation

The project supported four (4) consultative meetings on the new draft of the Mineral Policy and the Principles to be embodied in the new Mining Act Amendment Bill. A draft Green Paper was developed and key Principles to be embodied in the new Mining Act Amended Bill were identified and documented. The project initiated and is fast tracking the procurement of a consultant for formulation of a mineral laboratory Policy. The policy is expected to harmonise operations of the Mineral Laboratory towards ISO certification. Stakeholders' consultations on the mineral policy were held in Mubende district. Issues discussed included: co-existence of ASM and other mineral rights holders, Demarcation of areas for ASM and regulation of use of Cyanide and Mercury that imposes health and safety issues to the miners and the environment.

ii. Institutional Capacity for the mineral sector

The project supported capacity building of the Directorate in the following areas:

a) Occupation Health and safety at workplaces

Training 50 DGSM staff on health and safety issues at work places was conducted. The staff were enlightened on dangers of cancer and operational issues at workplaces. The training was aimed at introducing the DGSM staff to the needs of having a healthy and safe Human Resource in safe work place. The staff members were sensitized on the various health issues at workplaces and how to minimize the operational risks at workplaces.



Figure 40: DGSM Staff attending training on health and safety issues at work place

b) Exploration techniques for Uranium exploration

Training of geoscientists on safety guidelines for uranium exploration was conducted on the 17th September 2015 in the DGSM Board room in preparation for field work at Ndale volcanic field in Fort Portal District.

c) Appraisal of MWAMID Project by the Project Coordinator

The presentation provided a highlight on the project objectives, activities, expected outputs, indicators and procurement plan of the project. Training on Procurement processes that covered: initiation of procurements; Roles of User Department, Roles of Procurement Unit, and evaluations and approvals were also discussed. All managers were cautioned to plan according to the Procurement Plan and take note of the procurement timelines and fund allocation.

d) Human Resources Gaps Analysis

Training needs assessment was conducted to identify human capacity gaps for the successful implementation of MWAMID project. It was found out that training of managers and key staff members requires training in areas of: Procurement; Planning and Budgeting; Monitoring and Evaluation; Geological data packaging for promotions and routine statistical data capture and analysis for performance tracking and decision making. Training of Trainers from DGSM to extend services to miners, communities and other stakeholders was also identified as one of the key areas for successful implementation of the project.

e) Budgeting, planning process and accountability

Mr. Isaiah Tumwikirize (Ag. Principal Seismologist/ Planning Officer- DGSM) conducted training on Planning and Budgeting. He highlighted on the need for realistic workplans, absorption of funds, reporting timelines and alignment of plans to the NDPII objectives.



Figure 41: DGSM staff attending a Workshop on Planning and Budgeting

f) Mineral beneficiation technologies and ASM extension services

Training of DGSMS staff on extension services to miners was conducted on 14th October, 2015 in the DGSMS Board Room. A presentation on best mining practices and mineral exploration techniques was conducted by Mr. Gabriel Data (Ag. Principal Geologist); Mining in Uganda was conducted by Mr. Kedi Vicent (Ag. Senior Mining Engineer), Mineral beneficiation technologies and areas for improvement in ASM operations were conducted by Mr. Chris Lubangakene (Ag. AC/Labs), and mineral value addition in iron ore exploitation was conducted by Mr. Zachary Baguma (AC/Geology).

g) Mine inspection procedures and standards

The project conducted training to 10 DGSMS staff on mines inspection procedures, standards, and requirements in accordance with Regional Certification Mechanism (RCM) and mine operators on the requirements for compliance with the RCM. Draft inspection template based on RCM requirements was produced. RCM trial mine site inspection was conducted in Kikagati, Isingiro where four (4) red flags were raised on four mine sites for noncompliance with RCM conditions. Ms. African Panther Resources Uganda limited has made a private arrangement with the traceability service provider for certification of tin in Kikagati.

iii. Mineral Exploration, Development, Production and Value-Addition promoted

During the period under review, the project supported the mineral exploration and establishment of the mineral resources of the country as follows:

a) Geological, Geochemical and geophysical exploration of Uranium anomaly in Ndale, Kabarole District

The airborne geophysical surveys identified 80 uranium anomalies. These were ranked with thirteen (13) anomalies given the first priority. As a follow up of the 13 high priority targets for uranium, previously mapped, a team of geoscientists undertook a geological, geochemical and geophysical reconnaissance exploration on the Ndale Uranium prospect. Geological, Geochemical and Geophysical Surveys and studies were undertaken over the Uranium target located at Ndale Volcanic field in Fortportal District. Geological investigations indicate that the area is overlaid by Tonalites Tourmaline Gneiss (TTG), orthoquartzite, conglomerate, metagabbro, amphibolites, mica schist volcanic tuffs (Ndale Formation) and quaternary sediments. The geophysical study has confirmed that Ndale volcanic field is rich in radioactive minerals with average concentrations of Thorium (Th) – 120ppm, Uranium (U) – 55ppm and Potassium (K) – 1.5%.

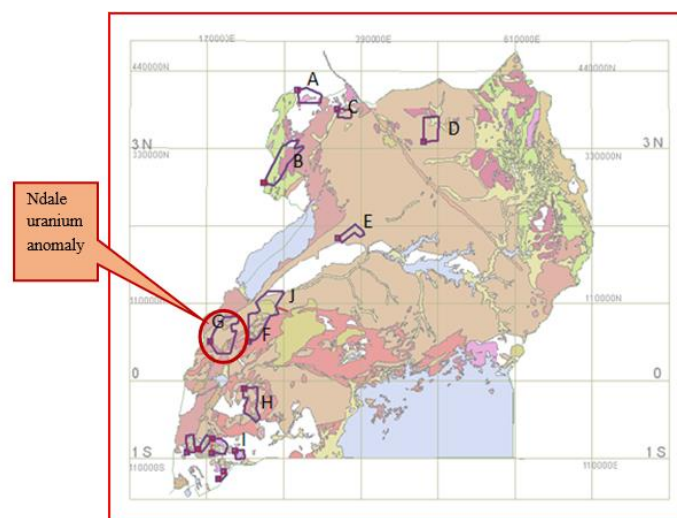


Figure 42: Map of identified Uranium target highlighting Ndale Uranium anomaly

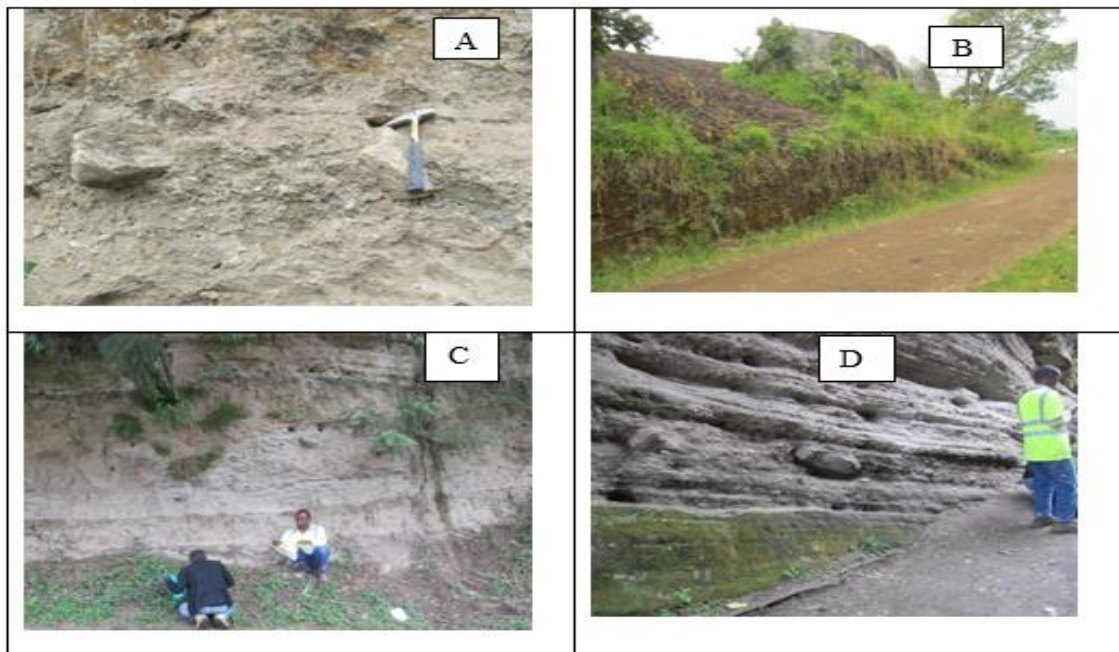


Figure 43: A) Tuff with angular to sub angular fragments and boulders, B) Tuff remnants fill lower parts of granite outcrops, C) Tuff bearing vascular vesicles and D) Bedded tuffs.

During the field surveys, measurements taken by use of a dosimeter on the volcanic tuffs resources gave values of Uranium as high as 10 microsievert (μSv) in the volcanic tuffs compared to the recommended field activity radiation exposure of 20 milli Sievert (mSv) per annum. Preliminary field analysis for Uranium and basemetals using an X-Ray Fluorescence Instrument (XRF) has delineated an anomalous area of 160km² East of Kibito. From statistical analysis of results, a uranium anomaly (63 to 105ppm) was identified around Kibiito covering an area of about 160km² that will be followed by detailed soil sampling. The uranium anomaly is also associated with elevated values of chromium (590 to 837 ppm) Manganese, lead with values of 164-239ppm, Nickel (114-154ppm), Arsenic (28-40ppm), and Nickel (114-154ppm).

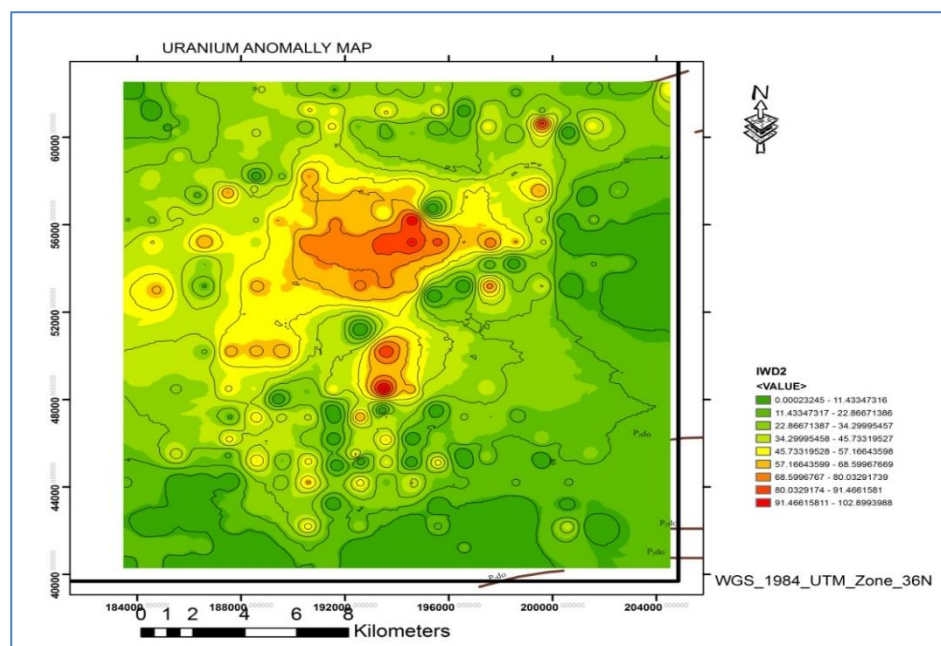


Figure 44: Uranium distribution contour map

b) Exploration of Iron Ore at Rutenga, Kabale District

A team of 20 geoscientists undertook exploration of iron ore at Rutenga in Kabale district. A total of 104 stream sediment samples and 29 rocks were collected for analysis. The exploration reveals more spatial extension of iron ore beyond the currently known boundaries. Panning for Heavy Mineral Concentrate (HMC) revealed one (1) speck of gold. The stream sediment samples were submitted to the mineral dressing lab for drying, demoulding, sieving for analysis. The rocks were submitted for crushing, pulverizing and analysing for various elements.

c) Geophysical Surveys of graphite anomaly in Kitgum

A team of geophysicists conducted geophysical Surveys over graphite anomaly in Kitgum district. The Survey is expected to delineate boundaries associated with graphite mineralizations.

iv. Health safety and Social Awareness for Miners

Sensitizations on Health, Safety and Social awareness of the miners was undertaken in Mubende in central Uganda; Namayingo and Busia in Eastern Uganda, Abim and in Napak Districts in the Karamoja Region. The outcomes of these sensitizations are (i) diversification of livelihoods in mining communities; (ii) the enhancement of benefits derived from mining; (iii) Mitigation of the negative impacts by Artisanal and small-scale miners; (iv) increase of participation by communities in the mineral resources management; and (v) mainstreaming of Artisanal and Small Scale Miners (ASMs). To-date a total of five (5) Mining Associations have been registered namely: Kayonza- Kitumbi mining Association in Mubende district; Morulem Mining Association in Moroto district; Busia United SMM in Busia District; Karita Mining Association in Kapchorwa district and Singo Artisanal Miners Association in Mubende district. During the year, updating and mapping of areas dominated by ASMs was conducted. Profiling of operations of ASMs was conducted in areas of Mubende in central Uganda, Namayingo in Eastern Uganda and Busia in Eastern Uganda. The base map for areas dominated by ASM activities was updated. In addition, the project supported field trips to build capacity of ASM Communities in Morulem, Abim to address environmental, social and gender and best mining practices. Terms of Reference (TORs) were prepared for a consultant to undertake registration for ASMs.

v. Licensing and inspection

The project supported inspections of mines to regulate mining operations and maximize the revenue generated from mining operations in the districts of Busia, Bushenyi, Tororo, Isingiro, Kamwenge, Kapchorwa, Kasese, Manafwa, Moroto, Mubende, Namayingo, Ntungamo, and Custom borders in West Nile.

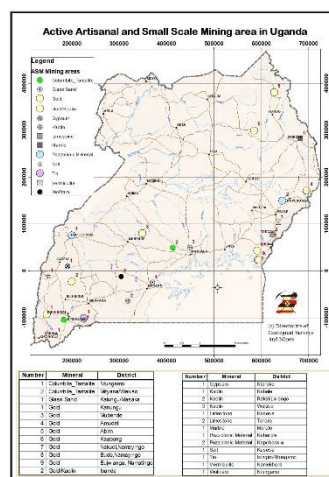


Figure 45: Location map of the current active ASM Mining areas in Uganda

vi. Government Buildings and Administrative Infrastructure

The key objectives of MWAMID include: (i) construction and restoration of earthquake research facilities and monitoring network stations; and (ii) construct four (4) mineral beneficiation pilot centers and strengthen institutional research capacity in geosciences, mining and develop mineral value addition skills of the youth to fully participate in extractive industry. During the year, MWAMID project initiated the procurement of a consultant to design an Earthquake Research Facility in Entebbe and construction of a regional office and a mineral beneficiation center in Moroto. A team from DGSM conducted verification on the status of land in Fort portal and Ntungamo that was originally earmarked for the construction of a regional office and mineral beneficiation centers.

It was established that the land in Fort portal was available and noted encroachment on the land by the locals. From the site visit, the team found a new incomplete residential property development being built illegally on the south end of the plot without the consent of the DGSM. DGSM was to follow up the issue and initiate procurement for surveying of the property before further development is undertaken. The follow up on land in Ntungamo District, measuring 2.11 acres, located about 1.2 km from Ntungamo – Kabale Highway on the road to Mrama Hills, just opposite Kyamate Integrated Model School that had been identified by the District for GSMD to setup a pilot training center for small scale mining after land was found to belong to Ministry of Works and Transport. DGSM encouraged to identify another suitable site land for a mineral beneficiation centre. In addition the Directorate conducted Investigation of land status in Gulu and the team noted a new development on Plot 4, Bere Road, Gulu Municipality ear-marked for the Directorate of Geological Surveys and Mines in Gulu.

vii. Procurement

During the year, the progress on procurements under MWAMID was as follows.

Table 22: Progress on procurements under MWAMID

ITEMS	STATUS
Design earthquake research facility	Procurement initiated and awaits input on TORs from the MoWT
Construction of regional mineral beneficiation centres: <ul style="list-style-type: none"> • Karamoja • FortPortal • Ntungamo • Tororo • Gulu 	Initiated construction of Karamoja regional office and mineral beneficiation centre in Moroto. Due for Advert for solicitation for bids from 12-22 nd January 2015. Verification of land status in Fort portal. Land available and plan to initiate procurement for survey of land. Land in Ntungamo, however, needs to be secured. Verification of land status in Gulu revealed new development on the same plot ear-marked for DGSM
Field Motor Vehicles	Procurement for 4 vehicles in progress. Awaiting for Contracts Committee Minutes of 15/12/2015 to forward report to SG for Clearance.
Seismic Station specialized Equipment for earthquake monitoring.	Evaluation Report forwarded to PDU for Contracts Committee consideration.
Mineral Certification Infrastructure Equipment	Requisition awaiting authorziation from the Accounting Officer.

Consultancy services of a policy consultant (Earthquake Administration Policy, Lab Policy, Mineral value Addition)	Initiated procurement for laboratory policy.
Airborne geophysical surveys of Karamoja	Not yet initiated. Letter indicating funding gap generated and forwarded by the PS/MEMD to MoFPED

4.4 Geothermal Exploration and Development

4.4.1 Policy Formulation

The Directorate carried out preliminary studies in preparation for the formulation of the draft Geothermal Policy and Legislation. The following activities were carried out:

(i) Issues identification

As part of geothermal policy formulation process, key issues, challenges and perceived barriers affecting the nascent geothermal industry in Uganda were identified.

(ii) Geothermal Drilling Code

The Project Staff attended a workshop at Hotel Laico in Entebbe, on the formulation of East African Geothermal Drilling code of Practice. The code will be an input to the Geothermal Policy and Legislation.

(iii) Mineral and Mining Policy Review

The Staff attended an inter-ministerial committee meeting for the review of the draft green paper for the national Mineral and Mining Policy at Speke Resort Munyonyo in Kampala.

(iv) Community Sensitization

The Project staff undertook sensitization of local communities in Kigorobyia Sub-county and Kibiro fishing village aimed at raising awareness on the proposed Geothermal Policy. Project Staff also met the First Deputy Prime Minister and Minister of Public Service, and the Staff of Hoima District Local Government on the proposed Geothermal Policy, use and benefits of geothermal energy, and on exploration and development of geothermal energy in Hoima District and Uganda.

(v) Progress on the drafting of the Geothermal Policy and Legislation

MEMD submitted a request to Climate Technology Centre Network (CTCN) to assist Uganda draft a Geothermal Energy Policy and Legislation. In September 2015, CTCN endorsed a Technical Assistance Action Plan with the Government of Uganda to provide expert services for developing the Geothermal Policy and Legislation. In November 2015, CTCN procured a consultant to develop draft documentation on Geothermal Policy, Act and Regulations. The consultant formed a consortium led by Carbon Counts (UK) which teamed with other UK and Uganda firms in order to meet the full range of expertise required to meet the objectives of the Technical Assistance (TA) project. Other Carbon Counts partners include: (i) Economic Consulting Associates (UK); (ii) Norton Rose Fulbright (UK); (iii) Pro-utility (Uganda); and (iv) Shonubi, Musoke and Company Advocates (Uganda). At national level, CTCN is represented by the Uganda National Council of Science and Technology (UNCST) as a National Designated Entity (NDE) which will work with the Ministry in executing the project and overseeing project implementation by the TA project consortium. MEMD formed an Inter-Ministerial Committee to work with the consultant on drafting the geothermal policy and legislation for Uganda. The

Consultant presented the Inception Report in December 2015 which was accepted by the Ministry and given a go ahead to proceed to the next step.

4.4.2 Institutional Capacity

(i) Mineral Policy

Project staff attended a Mineral and Mining Policy workshop at Grand Imperial Hotel, Kampala.

(ii) UNEP-ARGeo Project

The project staff met with GEF/UNEP Experts at Entebbe to discuss the implementation of the United Nations Environment Programme – African Rift Geothermal Energy Facility (UNEP-ARGeo) funded geothermal exploration programme at Kibiro. Other donor funded activities for the Kibiro project were also discussed.

(iii) Geothermal Risk Mitigation Fund (GRMF)

Project Staff worked with ISOR to refine an application for the Geothermal Risk Mitigation Fund (GRMF), in Addis Ababa, Ethiopia. This application was not successful but Uganda was advised to apply again in 2016.

(iv) Nuclear Power

Project Staff attended a consultative workshop on integrating nuclear power in the generation capacity plan 2015-2040 at Grand Imperial Hotel, Kampala.

(v) Training Needs Analysis

UNEP-ARGeo Experts and the DGSM staff undertook a training needs analysis to identify training and development needs as a strategy to cope with change. The training needs identified will lead to a sustainable geothermal development programme.

(vi) Geothermal Resources Department (GRD)

The newly established department became operational with three (3) permanent staff. Plans are underway to fill the vacant positions in the structure to advance development of geothermal energy.

(vii) Western Rift Geothermal Workshop

Three (3) Project Staff attended a meeting in Naivasha, Kenya in preparation for the Western Rift Valley Technical Workshop to be held on 9th to 11th March 2016 in Gishenyi, Rwanda. The title of the workshop is “Geologic Development and Geophysics of the Western Branch of the Greater East African Rift System with Emphasis on Factors that Control the Development of their Geothermal Systems”. The workshop will be sponsored by Icelandic International Development Agency (ICEIDA), United Nations Environment Programme (UNEP) and Energy Development Corporation of Rwanda, and Governments of participating countries.

(viii) Technical Review Meetings

These were held at the DGSM, Entebbe involving UNEP-ARGeo hired consultants, Geothermal Development Company (GDC) of Kenya, and the DGSM staff to discuss the progress of the joint geothermal exploration activities at Kibiro.

(ix) African Center of Geothermal Excellence (ACGE)

Project Staff attended a validation workshop on the feasibility Study of the Africa Center for Geothermal Excellence at UNEP Headquarters in Nairobi, Kenya. The overall objective of this validation workshop was to align all countries to the vision of Africa Geothermal Centre of Excellence and create country's ownership and leadership in the setting up and operation of the ACGE.

(x) Power Africa

Power Africa - Quarterly Update to Multi-Donor Strategy for Geothermal Development in East Africa was received. This builds on the donor coordination efforts from the Multi-Donor Strategy and review of what is happening in the geothermal field in Africa. The report highlights key developments in geothermal in the region, provide information on Power Africa's recent and upcoming activities, and provide updates to the activities, ranking, and analysis from the Multi-Donor Strategy as appropriate. Power Africa Regional Geothermal Advisor / Specialist was received and he advised on a number of issues including policy, financing, attracting investment in geothermal sector and role of IPP in developing geothermal energy in Uganda. Facilitating private investments in geothermal energy projects requires that governments create a legal environment that is conducive to long-term investment. Such an environment consists not only of governmental restraint in affecting the settled expectations of private investors, but also of explicit governmental authority for the contemplated investment.

(xi) ARGeo Regional Conference

One Project Staff attended the 6th ARGeo steering committee meeting at UNEP Headquarters in Nairobi, Kenya. Member countries gave up-dates on main geothermal developments going on. UNEP also gave an up-dated on UNEP supported projects in African Rift countries.

(xii) Skills Gap Analysis

DGSM together with UNEP continued with skills gap analysis to find gaps to be filled by the proposed African Center of Geothermal Excellence. A shortage of trained industry professionals is often cited as an obstacle to the growth of the geothermal industry.

(xiii) Geothermal Education and Training Guide

This guide (2011) by Geothermal Energy Association (GEA) was secured and will be used in planning training and education programs.

(xiv) Information and awareness

Thirty eight (38) support staff of DGSM undertook an awareness and information trip to Kibiro Geothermal Resource area. Forty one (41) support staff of DGSM undertook an awareness and information field trip to Karungu, Bubaare, Ihimbo, Minera, Rubaare and Kitagata geothermal area in Southwestern Uganda. Twenty nine (29) MEMD staff under the Finance and Administration (F&A) Department undertook an information and awareness field trip to Buranga (Geothermal), Kibenge geothermal area, and the Katwe-Kikorongo geothermal prospect.

4.4.3 Geothermal Exploration

The Government of Uganda and the Governments of Kenya and Rwanda have a memorandum of understanding (MoU) to cooperate in sharing information and expertise in developing the geothermal resources in the three countries. The MoU was signed by the Heads of States of the three countries Kenya, Rwanda and Uganda, under the Northern Corridor Regional Integration Project. Under the MoU, the Government of Kenya through its Geothermal Development Company (GDC) is to extend

technical support to the two countries Rwanda and Uganda. In 2015 the staff of GDC undertook preliminary field visit to Kibiro, Buranga and Katwe geothermal prospects. The team identified Kibiro, Katwe and Buranga as fault controlled extensional deep circulation systems. They observed that the three geothermal systems are fault-controlled geothermal systems that are driven by deep circulation of groundwaters. The team recommended joint gravity, magnetic and MT/TDEM resistivity studies to complete Pre-Drilling Exploration in these areas.

(i) Kibiro geothermal area

Under the ARGeo supported Project, the DGSM with support from the Geothermal Development Company (GDC) of Kenya undertook geothermal exploration surveys at Kibiro which included MT/TEM resistivity surveys, soil gas flux sampling and Radon measurement. The data collected was analyzed and the results show low resistivity anomalous area in the sediments between the escarpment and Lake Albert and possibly extending under the Lake. Focused geological surveys along the escarpment in the vicinity of the anomalous area were done to identify the faults controlling this anomalous area and the possible flow of fluids along these faults. Additional MT/TEM resistivity surveys and geological surveys are needed to delineate the extent of the anomalous area and to locate the upflow zone. The results will be used to update the conceptual subsurface model that will be a basis for siting exploration wells. The above activity was supervised by International Consultants from GEF/UNEP who are working with the DGSM staff to develop the subsurface models.

(ii) Katwe Geothermal Prospect

Field mapping was focused mainly along the main NE-SW rift bounding fault. Most of the surface manifestations are aligned along this main rift bounding fault. The NE-SW main fault extends to considerable depths which led to escape of magma as evidenced by the several volcanic explosion centers. Permeability is presumed to be restricted to this main fault bounded zones. Exposed tufa towers at Katwe are presumed to have formed under the lake Katwe. The tufa towers are remnants of the hot springs which have since cooled down and the geothermal fluids no longer reach the surface possibly due to the self-sealing nature of geothermal systems in a carbonatite environment. Rapid accumulation of these deposits causes the formation of hollow tubes and mounds that can grow to considerable heights as at Katwe (Glassley E. W, 2011). The volcanic field trend is near parallel to the rift margins.

(iii) Suam Geothermal Area

The geothermal team undertook a preliminary survey of Suam Geothermal Resource area. This is a caldera system controlled by rim fractures and Suam gorge fault. Relict of geothermal features extend for about 600m along the crater rim on top of the Mount Elgon. This geothermal resource area is believed to be associated with volcanic activity. Fluid flow within this geothermal system is controlled by faults (caldera rim) and fractures and the environment is likely to possess a geothermal resource.

(iv) Reconnaissance on the hot springs in Southwestern Uganda

Preliminary geochemical surveys were carried out at Buranga, Muhokya, Kitagata, Kagamba, Bubare and Karungu geothermal resources areas. The aim was to sample thermal waters, analyze them using recently installed equipment and compare with previous results.

(v) Rubaare Geothermal area

Report on preliminary survey of Kaiso and Rubaare geothermal areas was produced. These are deep-circulation systems which typify other fault-controlled geothermal fields that are driven by deep

circulation of ground waters. They are non-magmatic systems and are presumed to be related to deep circulation of meteoric water along faults and fractures. The surface temperature is 54.0°C. The system has structurally-controlled permeability and the environment is likely to possess a geothermal resource.

(vi) Kaiso-Tonya mapping

Preliminary surveys were undertaken around Kaiso-Tonya area following the high geothermal gradient indicated in the oil wells. This area is indicated to be an accommodation / transfer zone where crustal extension has resulted in crustal thinning and elevated geothermal gradient. Relicts of surface manifestation were discovered which included diatomite, tufa and gypsum flakes. Surface manifestations indicate the location of extinct hot springs and they also show the ancient extent of the system. Geothermal activity is presumed to be related to fluid circulation along deep reaching faults and a high geothermal gradient. The environment is likely to have been active in the past and has since cooled down.

(vii) Buhuka area-Kaiso-Tonya

Field mapping was undertaken at Buhuka area-Kaiso-Tonya. The permeability is presumed to be controlled by the main rift bounding fault zones. This is a fault-bounded extensional system related to crustal extension, thinning and elevated geothermal gradient. The high angle deeply penetrating faults are presumed to allow surface waters to percolate to deeper levels and get heated by heated thinned crust.

(viii) Butiaba-Wanseko mapping

Preliminary surveys were undertaken between Butiaba-Wanseko as a follow up reported geothermal gradient in oil wells (67°C/Km). This area was found to have accommodation zones which are characterized by intensive faulting, extensional thinning of crust and high heat flows. The heating of deeply circulating meteoric fluids along faults is facilitated by high geothermal gradient. Relicts of geothermal features were discovered around Butiaba. The important factor here is a path for the meteoric water to circulate deep into the ground and up again. Areas of young tectonic activity are commonly rich in this type. The environment is likely to possess a geothermal resource.

(ix) The Fort portal Volcanic Field

Regional assessment was undertaken in Kaberebere, Dwemkorebe (minerals springs along Dura river), and Fort Portal Volcanic (relicts of geothermal activity are reported at Kasekere volcano, Saka volcano and Nyabusozzi volcano. Relicts of geothermal features were found as well as active features (gaseous emissions). The Fort Portal volcanism is on rift shoulders (off-axis volcanism) and is a geothermal target. The environment is likely to possess a geothermal resource. The age of the volcano is estimated at 8,000 years. There is need to conduct a resistivity survey over the area to determine if the area has a geothermal system.

(x) Northern Uganda warm springs

DEM maps were prepared to ascertain the structural control of thermal (warm) springs in Northern Uganda. This was overlain with regional geology map. These thermal springs are non-magmatic and are presumed to be related to deep circulation of meteoric waters along deep tectonic faults and fractures. Warm springs appear in valleys like at Amuru Pakelle (Adjumani), Erege (Amuru), Pababek (Lamwo), Amuru (Amuru) and Amuru (Nwoya). These are presumed related to regional heat flow associated with radiogenic heat associated with the Aswa Shear Zone (Tapio Ruotoistenmäki, 2013).

(xi) Classification of the geothermal resources

The project staff carried out classification of the geothermal resources area so that exploration strategy employed in one area can be applied in another area of similar settings. A report was compiled showing the hot springs of Uganda with pictures. It also examines the type of geothermal systems which include fault-bounded extensional systems, and penetrating fracture / fault systems.

(xii) Direct uses of geothermal resources

Unlike geothermal power generation, in which heat is converted directly to electricity, direct use applications use heat energy directly to accomplish a broad range purposes. A report on direct use application potential of Uganda's geothermal areas has been prepared to promote integrated multiple uses of geothermal energy in Uganda.

4.4.4 Geothermal Database Management

The department has put in place a geothermal database which is continuously updated and maintained. So far 650 reports have been compiled and up loaded into the database. A data backup system has also been put in place in case of computer breakdown or any other problem that could lead into loss of data and information. Uganda is a member of the African Rift Geothermal Facility (ARGeo) which has set up a regional database, the African Geothermal Inventory Database (AGID) which is shared by member countries. The database is continuously updated by member countries.

4.4.5 Training and Human Capital Development

The staff of the DGSM has participated in a number of short courses/attachments abroad and in Uganda as follows:

- (i) **Management Training and Advisory Center (MTAC):** Nine (9) project staff attended a short course in Occupational Health and Safety at Management Training and Advisory Center (MTAC), Nakawa.
- (ii) **Uganda Management Institute (UMI):** Eight (8) project staff attended short courses at Uganda Management Institute (UMI) in Project Planning and Management, and Management Improvement Skills.
- (iii) **ARCGIS Training:** One (1) Project Staff attended a short course in ARCGIS analysis from Geo-Information Communication Ltd., in Kampala.
- (iv) **Transferable Skills:** Project Staff continued with the following courses; CIPS, M.Sc. Library science, Bachelor of Records and Information Management.
- (v) **JICA training:** Two (2) Project staff attended a course "Enhancement of the planning Capacity of geothermal Power Development (B) in Japan sponsored by JICA.
- (vi) **UNU-GTP Kenya:** Three (3) project staff undertook short course X exploration for geothermal resources organized by UNU-GTP, GDC, and KenGen. This was at Lake Bogoria Spa Resort and Enaishipai Spa and Resort, Naivasha Kenya. A paper, "geothermal exploration in Uganda status report" was presented by Project staff.
- (vii) **On-the Job Training:** Project Staff underwent hands-on training on how to acquire MT/TEM data by the GDC consultant and on data processing / modelling by UNEP ARGeo hired consultants in Kibiro, Buranga and in Entebbe. Project Staff undertook on-the-job training in the use of Radon meter and portable Orsat Gas flux meter at Kibiro during soil flux gas measurement.
- (viii) **Equipment Training:** Project Staff undertook training on how to use the newly acquired (Gravity meter, Global Navigation Satellite System (GNSS); Portable XRF (Niton XRF analyzer XL3t 500).

- (ix) **Agilent Spectroscopy:** Seven (7) staff members attended a seminar on Introduction to Spectroscopy products (AAS, MP-AES, ICP-OES, ICP-MS) at PEPD boardroom.

4.4.6 Licensing and Regulation

Fourteen (14) licenses were operational in the year 2015. All the licenses have been inspected and most of them have been recommended for suspension for non-performance. The following licenses were recommended for renewal/or continuation of operations:

(i) Gids Consult Limited (EL 0275)

The company has done substantial good work at Buranga in Bundibugyo and Ntoroko Districts. They have done geophysical surveys using MT/TEM and located some low resistivity anomalous areas. Additional geophysical surveys need to be done and to develop conceptual subsurface models that will be a basis for locating drill sites.

(ii) Pawakom International Limited (EL 1060) and Cozumel Energy Ltd (EL 0705)

The above Licenses expired in 2015 and the two companies have applied for renewal. The two applications are being reviewed for renewal.

(iii) AAE Systems Inc., (EL 1377)

In August 2015, the company presented a progress report to staff of the DGSM. Project staff undertook a field visit together with a mission from AAE. It was agreed that the company revises their work plan and submit to the DGSM for further review. They later submitted a revised work plan which is under review.

4.4.7 Health and Safety

MEMD procured Health and safety equipment, as well as Personnel Protective Equipment (PPE), for field activities. Training materials on Health and safety in geothermal environments were also procured and given out to staff. Nine (9) staff of the DGSM participated in training in occupational health and safety at Management Training and Advisory Centre (MTAC) in Kampala.

Literature in form of reports/books on environmental issues was acquired and includes the following:

- (i) A report "Environment Impacts and Mitigation" by Kevin Brown (Geothermal Institute, University of Auckland, New Zealand), and Jenny Webster Brown (Environmental Science, University of Auckland, New Zealand) 2003,
- (ii) Environment effects of geothermal power by S.J. Goff, P. Prophy and F. Goff,
- (iii) A guide to geothermal energy and the environment by GEA,
- (iv) Environmental, Health, and Safety Guidelines for Geothermal Power Generation by IFC and World Bank,
- (v) Geothermal Energy: Renewable Energy and the environment by Glassley E. William.

4.4.8 Specialised Equipment

Several equipments were procured by MEMD for geothermal exploration under Project 1199: Geothermal Exploration and Development in Uganda. They include the following:

(i) Geophysical exploration equipment

Six (6) MT and one (1) TEM Equipment, Gravity meter (1), and Global Navigation Satellite system (1) were procured.

(ii) Others Accessories

Niton Thermal Scientific Analyser (1), Mercury meter (2), Thermo couple (2), Micro burrete (3), micro pipette (3), Multimeter (1), Analytical Balance (2), Gas Analyzer (2), Magnetic Susceptibility Meters (1), GPS (18), Tough Book (3), External Hard Disc (6), CDs (200), Digital mapping system (2), Binoculars (2), Digital Camera (4), Geological hammers (22), Hand lenses (15), Compass clinometers (43), Microscope (2), Health and Safety Equipment (first aid kits 10), Clear safety goggles (10), Plastic goggles (10), Multi-Purpose Mapping Coat (20), Ruck Sack (15), Geo Belt pack (10), Geo Rock Bag (10), Water proof back packs (10), High Visibility safety polo (20), Meteorological Equipment (4), Field Notebooks & Mapping pens, Mechanical auger (1), Nitric acid (2ltrs), Filter Membranes (50), Plastic sample bottles (500), Glass sample bottles (100), Geological software (5), Digital thermometer (4), Multi-parameter meter (1), Computer (50), Scanner (2), Printers (1), Office furniture and Office supplies.

4.4.9 Promotion of Geothermal Energy

A number of project proposals were formulated in 2015 and submitted to potential development partners for support. They included the following:

- (i) Scaling up Renewable Energy Programme (SREP):** Government applied for SREP funding to develop wind and solar energies, and a 130MW geothermal power plant. In 2015, the AfDB, WB and IFC approved \$50 Million of which \$33.8 Million will be used to finalize surface exploration and drill six (6) wells in two (2) geothermal prospects of Uganda. The rest of the funds will be used to develop Solar and Wind energy. SREP is expecting co-funding of US\$7.0 Million from the Government of Uganda. The project is expected to start in 2016.
- (ii) BMZ-BGR-AUC:** Project staff attended BMZ-BGR-AUC programme planning workshop on BGR's 'Geothermal Cooperation with the African Union and Eastern African Countries 2016-2019' in Addis Ababa, Ethiopia. The aim of the workshop was to identify specific needs and demands of individual countries, possible activities with development partners so that they can be incorporated in the new regional programme: GEOTHERM III (2016-2019).
- (iii) ERT-III Geothermal Component:** Project staff met officials from World Bank and ICEIDA to discuss how the WB funding from the ERT III to the tune of US \$700,000 is to be used to support geothermal development. The funding is to be used to purchase geochemical exploration equipment. ICEIDA also promised to support Uganda in training of Ugandans in the field of drilling and reservoir evaluation. This would depend on the request from the Government of Uganda.
- (iv) Global Geothermal Alliance (GGA):** Uganda joined the Global Geothermal Alliance (GGA) member countries. Global Geothermal Alliance initiative serves as a platform for dialogue and knowledge sharing among partners as well as a coalition for action to increase the share of installed geothermal energy generation worldwide.

4.5 Geological Surveys

The Department of Geological Survey is responsible for establishing, promoting the development, strategically managing and safeguarding the rational and sustainable utilization of mineral resources for social and economic development of the country. The stated mission of the Department of Geological Survey is: to ensure reliable, adequate and sustainable management and utilization of mineral resources of Uganda; and to provide geo-information that contributes to a better management of the nation's natural resources and that promotes the health, safety, and well-being of the people of Uganda. The Key outputs achieved are presented under the following sections: Geological Surveys and Mineral Resources Assessment; Geophysical Surveys and Monitoring of

geotectonic activities; Geodata/Information Management and Mineral sector Promotion; and Laboratory services.

4.5.1 Geological Surveys and Mineral Resources Assessment

During the period under review, the following were achieved:

a) Geological and geochemical surveys of sheet 56/3, 56/4, 66/1 and 66/2 in Ndale volcanic fields, Fort Portal

GSD undertook ground follow up of uranium anomaly in Ndale, Fort Portal. Soil sampling at 1 sample per sq. km, streams sediment sampling, mapping unconformities, mapping along the soil sampling grid, mapping river creeks, road cuts and mapping and sampling toilets/pits /excavations were carried out. The mapping indicates that area is underlain by Buganda Group, composed of Tonalities, tourmaline gneiss (TTG), orthoquartzite, conglomerate, Metagabbro and amphibolite which is in turn overlain by Phyllitic schist with quartzitic interbeds and later intruded and overlain by Fort Portal granite and Ndale volcanic and quaternary sediments.

During mapping, samples were described and readings were carried out using dosimeter. The highest readings of 10 microsvert (μSv) were recorded in tuffs with angular to sub angular fragments, volcanic bombs and boulders, tuff remnants filling lower parts of granite outcrops, tuff bearing vascular vesicles and bedded tuffs. Regional geochemical survey covering an area of 506km² of Fort portal west uranium anomaly was conducted concurrently with the geological mapping. Regional soil survey was sampled at a grid of 1km x 1km to generate targets for detailed follow up. The survey covers part of sheets 56/3 (Bundibugyo), 56/4 (Fort portal), 66/1 (Mubuku) and 66/2 (Kahungye) in Kabarole District. The samples were dried and sieved to 125 μm in the mineral dressing laboratory at the Directorate of Geological Survey and Mines. They were analysed by using a portable XRF for Ag, As, Au, Ba, Ca, Cd, Co, Cr, Cs, Cu, Fe, Hg, K, Mn, Mo, Ni, Pb, Rb, S, Sb, Se, Sn, Sr, Te, Th, Ti, U, V, W, Zn and Zr . Part of the sample was analysed using Atomic Absorption Spectrum (AAS) for gold, platinum group of metals and Rare Earth Elements whose detection limit is low to be analysed by PXRF. From statistical analysis of results, uranium anomaly of values 63 to 105ppm was identified around Kibito covering an area of about 160km² for further follow up. The uranium anomaly is also noted to associated with elevated values of chromium 590 to 837 ppm (Figure 46), Manganese, lead with values of 164-239 ppm, Nickel (114-154 ppm), Arsenic (28 -40 ppm), and Nickel (114-154 ppm).

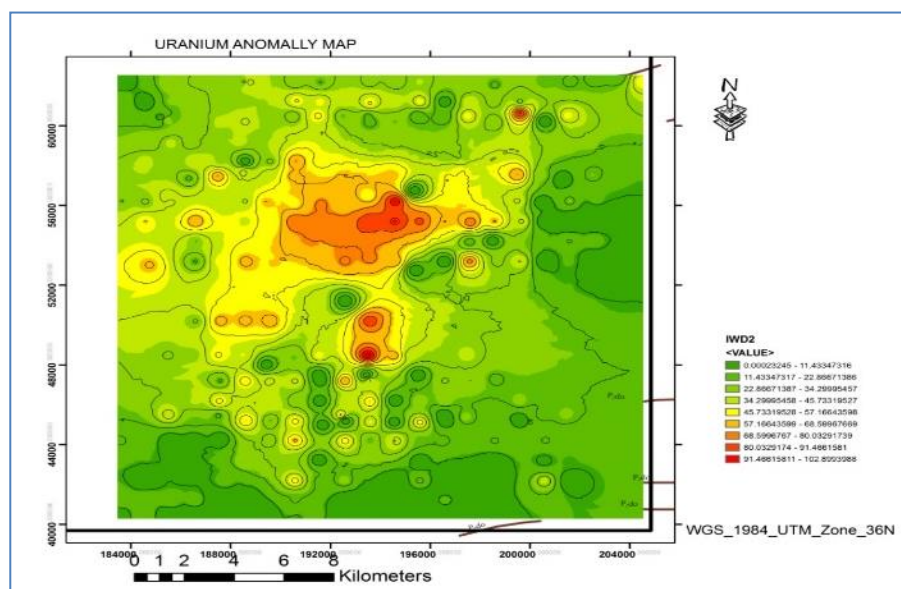


Figure 46: The uranium anomaly

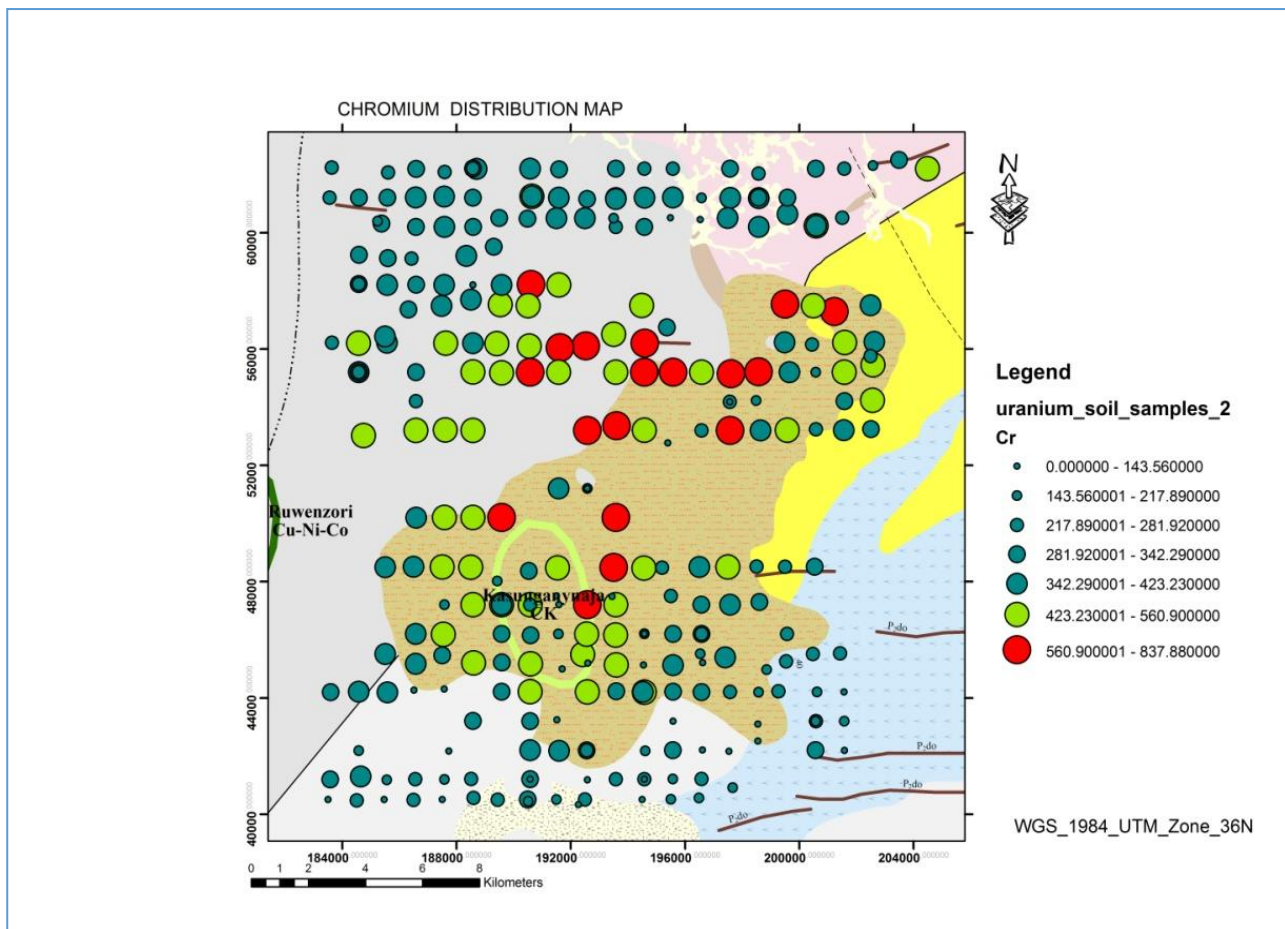


Figure 47: Uranium and Chromium distribution map

b) Geological Mapping and Mineral Assessment of map sheet 93/2 (Rubanda) and 94/1 (Mpalo), Kabale district

Geological and geochemical surveys for iron ore, gold and base metals were undertaken on map sheets 93/2 (Rubanda) and 94/1 (Mpalo) in Kabale and Rukungiri Districts respectively. A team of geoscientists undertook geological mapping in Rutenga area, Kabale. The objective of the field works was to establish the extent and the nature of the iron ore lenses as compared to the well-known Muko Iron Ore zone deposits.

Geological observations revealed that the geology of Rutenga iron anomaly is constituted by mudstone, shale, phyllite of Kirimbe Formation. Although clearly dominated by argillaceous rocks of a low grade, but eastwards increasing metamorphic grade, the mudstone-shale-phyllite succession of the Kirimbe Formation contains a number of arenaceous intercalations of variable thickness. Other rocks intercepted in the area include: phyllitic shale, sandstone, siltstone, laterite and ironstone. In addition, boulders rich in goethite and hematite up to one meter in size, indicate the existence of similar hematite/ironstone horizons in the succession as observed in the west.

Using the handheld magnets, it was verified that the iron lenses, which are predominantly hematite-rich are set in a magnetite-rich country rock that defines the Rutenga Fe zone. Distinct magnetite crystals were observed near Mparo along the road to Noozi while essentially magnetic phyllite dominates in the other areas. A test check at the end of fieldwork done on the Kabale Fe working country rock on the outskirts of Kabale town (on the Kisoro road) also discovered a magnetic country rock. This mapping and mineral zoning that was partly based on airborne geophysics (magnetics in this case) with limited ground truthing. The study confirmed the current existing iron ore anomaly and

additional lenses beyond the current existing iron ore anomaly zones. A total of 39 rocks/minerals have been collected for further analysis to determine the grade of iron ore in the Rutenga area.

c) Geochemical surveys of sheets 93/2 (Rubanda) and 94/1 (Mpalo) in Kabale District

Regional stream sampling was selected targeting first and second order streams using topographic maps prior to field work. The coordinates of the sample sites were recorded using Global Positioning System (GPS) and plotted using ArcGIS software to produce a sampling site map. However, the final sampling point was selected basing on accessibility and landuse/cover factors. The samples were taken from flowing stream, dry river channels or overbank. A total of one hundred and four (104) stream sediments and seven (7) rock samples were collected.

Manifestations of mineralization:

A shear zone was observed in a stone quarry on a road cutting along Kabala- Mpalo road a few kilometers towards Mpalo trading centre. The quartzite in a stone quarry is sheared and impregnated with iron (hematite) associated with fine silica. The shear zone trends 188° with a dip of $54^{\circ}/274^{\circ}$. Quartz veins between competent quartzite trending 184° with a dipping of $32^{\circ}/094^{\circ}$ cross-cutting the shear zone are brecciated and impregnated with spectacular iron and quartz crystals. In some part of the shear zone it was observed that during shearing the ductile material, the phyllite is as intercalation in brittle quartzite. However, the quartz was not fractured and for any mineralizing fluids it should have remained in the contact between phyllites and quartzites. Three samples were taken including the thin layer between phyllite and quartzite for analysis.

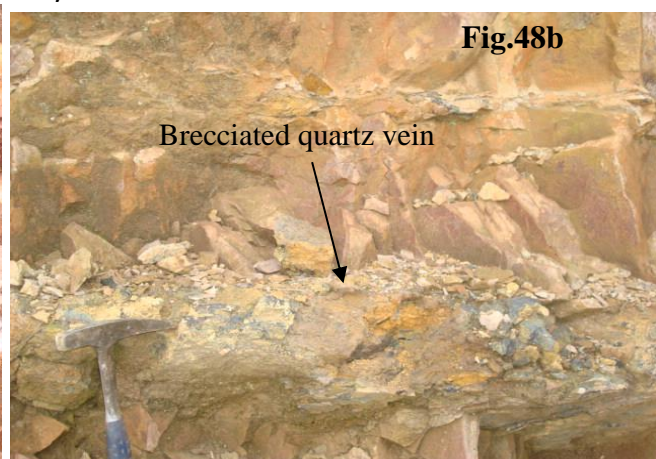
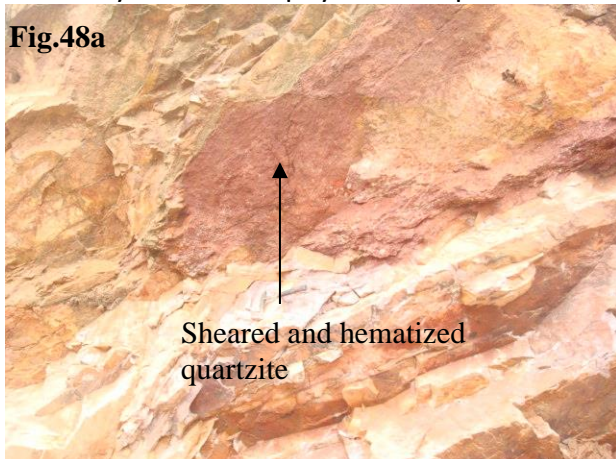


Figure 48: a-sheared and hematized quartzite, b-Brecciated quartz vein impregnated with limonite and hematite, c-sheared phyllites intercalations within the competent quartzite.

Sample preparations and analysis:

Samples are being prepared to be analysed by a Portable XRF to select ones with high iron content after which, they will be analysed by the bench top XRF to determine the iron grades. An iron anomaly map shall be generated for future detailed follow up. Additional mineralisation of interest shall also be established and appropriate analytical regimes suggested.

4.5.2 Review of Exploration Programmes and Updating Geoscientific Data

Sixty five (65) TN applications were reviewed and fifty one (51) exploration Licenses were reviewed for consideration for renewal. In addition the following exploration license activities were reviewed with the view of building up geo-scientific database and improving mineral reserves.

a) Frontier Exploration Uganda Limited (EL1173)

Exploration License (EL1173) that covers a portion of the Rom Mountain area was granted to Frontier Exploration Uganda Limited (FEUL). Through mapping, pitting, sampling and analysis, graphitic granulite measuring about 1 km wide and 24 km long has been delineated. Inferred tonnage of graphitic gneiss of 7.75 million tonnes from an area of 62,000m² x 50m depth x 2.5 gm/cm³ density giving inferred graphite resource of 1.2 million tons at 15.78%

b) Consolidated African Resources Limited (EL1025)

Exploration License (EL1025) that covers a portion of the Rom Mountain area was granted to Consolidated African Resources Limited. Through mapping, pitting, trenching, drilling logging, sampling and analysis, three zones graphitic granulite has been delineated. The result from three drill holes shows that graphite bearing zone varies from 0.2-11m thick that are hosted with in intercalations of amphibolite, barren gneiss and graphitic gneiss to a depth 154m. Samples have been sent for analysis.



Figure 49: Director/DGSM monitoring the graphite drilling program in Orom, Kitgum

c) SIPA Resources Limited (ELs 1048 and 1271)

ELs 1048 and 1271 were granted to SIPA Resources Limited and through continued mapping, soil rock, augering, RC, Rotary Air Blast (RAB) logging, sampling and analysis has confirmed continuity of Ni-Cu anomalous zones at Akelikongo. The results indicate that a very continuous mineralised intrusive complex runs along the western gravity anomaly for at least 500m open in all directions with mineralized nickel-copper sulphides from 25m to 141m wide ranging from 0.25% to 0.45%. It is important to note that SIPA Exploration Uganda Limited has continued to report interesting results from their exploration areas (Akelikongo Ni-Cu Sulphide, Pamwa Zn-Pb and Lawiye-Adul) in Kitgum district. Drilling results from Akelikongo Ni-Cu Sulphide prospect has indicated 3.4m @ 0.93% Ni and 0.10% Cu from 94.2 to 97.6 including 1.3m @ 1.49% Ni and 0.11% Cu from 95.4m to 96.7m and 0.4m @ 1.59% Ni and 0.2% Cu from 97.2m to 97.6m.

d) Updating geochemical index map

To facilitate access to geochemical data, the geochemistry unit together with the cartography section re-typed BGR data (1650 sample sites), branch energy data (2454 sample sites), and Roraima data from hard copy to soft copy in excel sheet. All this data has been used to update geochemical index map and a draft index has been produced. More files were being reviewed to capture XYZ geochemical data and convert them into editable soft copies.

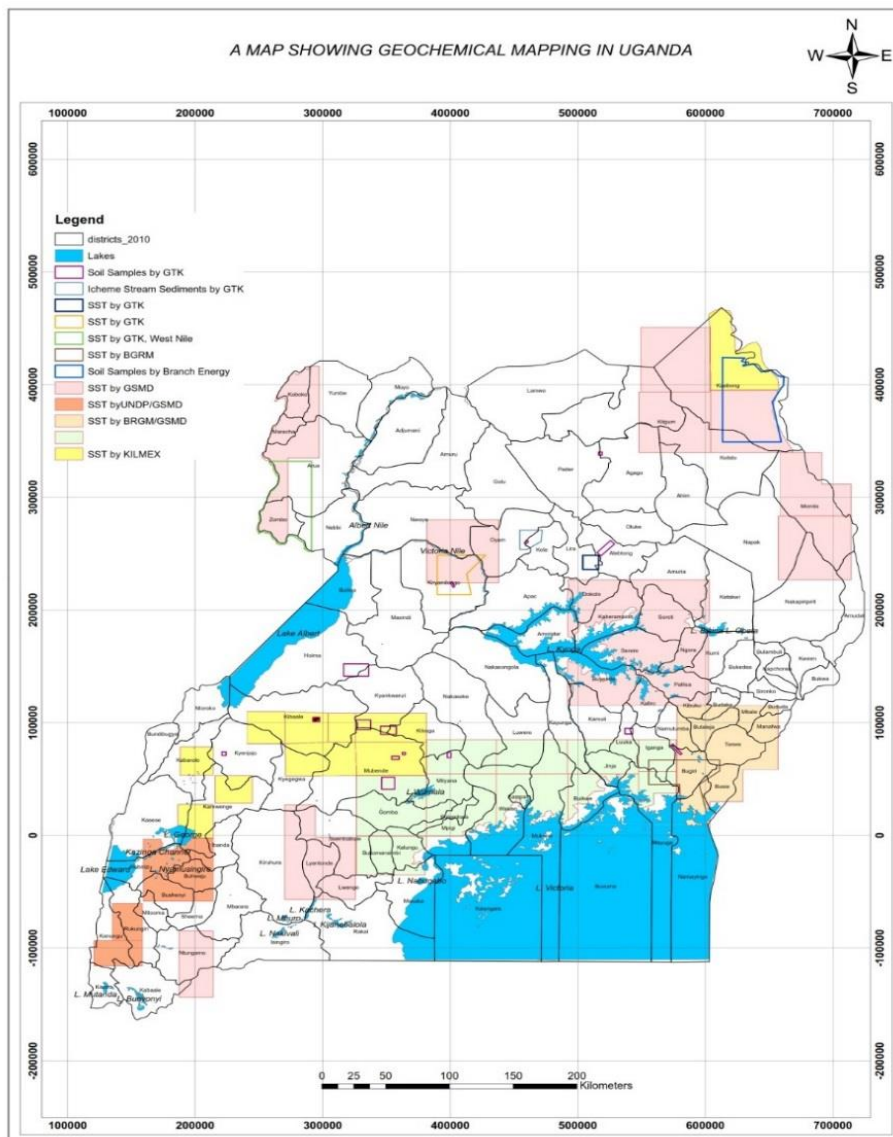


Figure 50: Geochemical index map of Uganda

e) Petrological identification of minerals

Seventeen (17) samples and specimens were analyzed in the Petrology lab and these were identified as gemstones and ordinary rocks. Among those identified were 5 pieces of diamond, basalt, phonolite, amphibolites, two (2) pyroxene, moldavite, quartz vein rock and muscovite. Six (6) thin sections from entities including Ministry of Works and Transport as well as National Forest Authority (NFA) were prepared for purposes of aggregate and dimension stone. All the rocks studied were granites and petrological reports were prepared. Eight (8) granite rocks for investors carrying out feasibility studies for dimension stone potential were sized and polished. The rocks were from Mubende and Mukono areas and were granites and metagabbro.

f) Equipment for Uranium Exploration

Under the programme of Strengthening the National Capacity for Uranium Exploration and Evaluation (UGA/2/002), the directorate received four types of equipment namely:

Spectrometers: Two spectrometers (Model: Super-Spec RS 125) were received, tested and found to be performing well.

Stabilization buttons: Stabilization buttons were tested using the BGO RS 230 gamma ray spectrometers and found to be in good working condition.

Electronic Personal Dosimeters (EPDs): Ten (10) Electronic Personal Dosimeters (EPD) that detect and measure beta and gamma radiation were received. They provide an estimate of the radiation dose that a person wearing the EPD has received. The dosimeters were tested and found to be functioning well.

Garmin GPS: Four Garmin GPS devices and their accessories were received, tested and are in good working condition. Each GPS box consisted of a charger with a BS connector, a manual, a hook to attach the GPS, a pair of rechargeable AA batteries and a USB data cable that can be used to connect to other devices. The GPS testing was done by first charging them in 240V power supply and then taking navigation around the office premises. The GPS devices have a user friendly touch screen user interface and other features like camera, wireless sharing and torch which are all working perfectly.

4.5.3 Geophysical Exploration and Monitoring of Earthquakes and Geohazards

The directorate undertook geophysical surveys and exploration to define areas of high mineral prospectivity in addition to monitoring of earthquakes in the country. The following activities were undertaken.

i. Geophysical investigations of Ndale, Fort-Portal volcanics uranium anomaly

Fort Portal and Ndale volcanic field located in Kabarole district has been investigated for Uranium spanning for the past decades with the recent investigations using high resolution aeromagnetic and radiometric data acquired by Fugro Airborne Surveys Ltd in 2008. The geophysical team conducted ground magnetic and radiometric surveys to further redefine the anomaly.

Ground Magnetic Surveys were conducted on four (04) profiles of the planned grid in the area. Three (03) Scintrex EnviMag proton precision total field magnetometers were used to measure the total magnetic field intensity in this survey where one unit was setup as a base station and the other two were used as rovers along the profiles. The base station magnetometer was located at UTM coordinates 185798mE, 61324mN (WGS84 datum). A total of 2,027 magnetic measurement points were recorded with station interval of 10m and 2km as interline distance. A total of 38.5 line

kilometers were covered along the 4 lines that were surveyed. The ground magnetic data reveals a low magnetic signature for the volcanic tuff and quartzite while granite-gneiss is predominantly relatively magnetic. The magnetic data also reveals high magnetic anomalies majorly trending east-west and these are in conformity with the measured high potassium rich Fortportal granite and gneisses. Radiometric data was collected from a total of 10 survey lines trending east-west and totaling a 137 line km coverage. All data from ground radiometric work was compiled in Microsoft Excel and the data was contoured in ArcGIS and overlaid over the geology of the area. The preliminary interpretation indicates that:

- Fort Portal – Ndale Volcanic field is a dominantly Thorium rich field compared to Uranium and Potassium concentrations with average concentrations of Th – 147ppm, U – 136ppm and K – 1%.
- The high concentrations of Uranium counts are predominantly in the volcanic tuff formations compared to the relatively low counts in granite-gneiss and sericite quartzite formations.
- The ground magnetic data reveals a low magnetic signature for the volcanic tuff and quartzite while granite-gneiss is predominantly relatively magnetic.

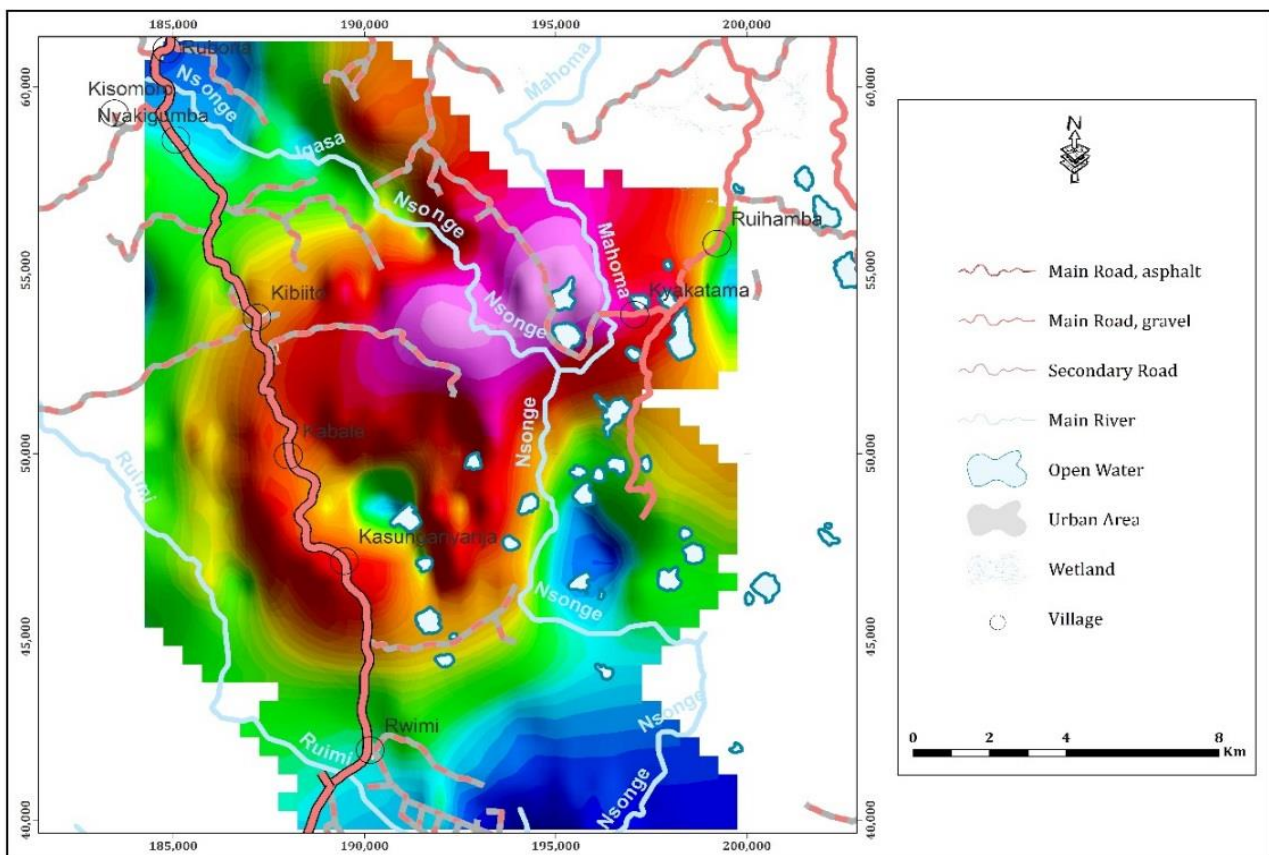


Figure 51: Equivalent Uranium map of surveyed area

ii. Graphite anomaly in Orom, Kitgum District

A team of geophysicists undertook geophysical Surveys over graphite anomaly in Kitgum district. The Surveys expected delineated boundaries associated with graphite mineralization.

iii. Seismology Unit

- Monthly routine service visits to Kyahi-Mbarara (MBAR) seismic station were carried out. The main purpose of the visits was to make backup iso-images of the seismic data that is recorded and automatically archived at this station. These backed up images of data can be requested

by UCSD-IDA in California at any time when it is found out that there is some missing segments in their online data archive.

- Between 10th – 14th November, 2015, Mr. Mauricio Patino, a Telecommunication Engineer with MP Integral Telecommunications, Inc. Houston, Texas, USA and Joseph Nyago, Ag. Seismologist visited Kyahi MBAR seismic station to troubleshoot and rectify the malfunctioning VSAT terminal facility that is used to transmit seismic data between the station and the collection center in San Diego California, USA.
- Upcountry seismic stations at Kilembe (KILD) and Hoima (HOID) at Katasiha cultural sites, Hoima district continued to send seismological data by means of virtual private network (VPN) to the collection and analysis center at Directorate Headquarters in Entebbe.
- The unit staff continued to request and retrieve raw waveform data (seed files) for MBAR station from IRIS online database, and extraction of seismic event time segments, database auto-registration and phase picking using SEISAN earthquake analysis software.
- On Wednesday, 25th November 2015, a tremor was detected and recorded in the region as in table 23 below. The tremor was also felt in the Capital Kampala.

Table 23: Location of a tremor recorded on 25th November 2015

Time	Location		Magnitude (Richter)	Depth [km]	Geographical Location
	Latitude	Longitude			
2015:11:25 (GMT) 09:38:15 12:38:15 (EAT)	0.062°N	29.32°E	4.7	10	Lake Edward Event (South of Kilembe, Uganda).

4.5.4 Geodata Management and Mineral Sector Promotion

To facilitate data access and promote investment in the mineral sub-sector, DGSM acquired maintained and disseminated geodata/information and managed an integrated geodata and information system within the sector. Through its Documentation Centre the Directorate acquires, processes, updates and provides information to researchers, staff, investors, policy makers and the general public based on their requests for socio economic development of the country. The Directorate maintains an integrated geoscience database on geology, minerals and mines to support national development of the country and the DGSM website for effective dissemination and promotion of investment in the sector. During the period under review, the outputs achieved were as follows:

- a) Geoinformation acquisition, documentation and processing
 - i) One hundred and eighty six (186) downloadable technical reports and metadata for sixty two (62) publications were received, processed and uploaded in the Unpublished Document Information System (UDIS) and Libero respectively. These reports were also captured in the manual economic mineral databases, reference file records, half degree sheets, authors' and bibliographic catalogs
 - ii) Continued organizing reports and all information received in the DGSM archive to improve on storage and access of the geological information in the archive (progress 70%)
 - iii) Classification and indexing of Records in ERMS is 53% done. A key word list was updated in ERMS.
 - iv) Continued to identify and scan articles of mineral sector interest and uploaded them on UDIS database for easy access; the key issues in the news included: Bid notice for supply of cabin pickups for DGSM, Bid notice for construction of Moroto regional offices for DGSM; Women demand for mineral funds; Karamoja could miss royalties from minerals; Miners rescued after

41 days underground; Kasese sand mining condemned; Biraaro to set up mineral institution; Sukulu Phosphate project; death in the gold mine; Kilembe Copper Mine and geothermal energy.

b) Geodata/information integration and management of geodatabases:

- i) Commenced the preparation of integrated infrastructure map through data integration of Roads, Minerals, Mines and other utility data layers to facilitate planning for mineral rich corridors of the country
- ii) Commenced data collection for preparation and update of map showing developmental minerals such as granites and other industrial minerals
- iii) Updated geochemical map index with datasets from SIPA Exploration Company
- iv) Commenced preparation of the geological and geochemical map for Uranium prospect at Ndale, Fort portal and Rutenga iron ore prospect
- v) Updated a map showing ASM active mining areas
- vi) Evaluated forty seven (47) mineral rights applications for spatial overlaps and advised on the availability of areas for exploration and mining activities

c) Geoinformation Dissemination and Mineral Sector Promotion:

- i) A total of 97 DGSM staff members, 103 visitors/clients were registered at the DGSM. All inquiries on mineral deposits in Uganda, Mining, mineral potential of Uganda, Geological maps/data, mineral rights, Investment opportunities in various commodities were handled and information availed to various stakeholders.
- ii) Updated and maintained the DGSM website on (www.uganda-mining.go.ug). A total of 11,615 visits were made to the Website.
- iii) A total of Three hundred and three thousand (303,000 UGX) Uganda shillings was realized from sales of geodata, publications and maps.
- iv) 413 publications were given out on complimentary basis; 132 Copies of Mining Act, 2003; 130 copies of Mining Regulations; 64 Copies of Mineral Policy; 18 copies of Mineral Resources of Uganda; 5 Copies of Opportunities for mining Investment in Uganda ; 4 copies of Handbook for Small Scale Mining in Uganda; 2 copies of procedure of symposium on investment opportunities in Uganda; Opportunities for mining Investment in Uganda
- v) Provided guidance to investors on available areas for mineral exploration and mining opportunities in the country

The promotion of the sector was realized through the online systems as well as mining promotional conventions abroad. The Directorate participated in the following mineral promotional events:

- i) Mining Indaba 2015 Convention from 9-12th February 2015 in Cape Town, South Africa. The main objective of participating was to promote and attract investment in the mineral sector by interacting, learning, networking and establishing collaborations with other international organizations for best practices and latest developments in technology in geological mapping, mineral exploration and development.
- ii) The Mineral wealth conference was organized by Uganda Chamber of Mines with the theme of 'Uganda transformation; a New Era in Mining'. The conference attracted both local and international participants from all over the world. A number of presentations and exhibition on Uganda's Mineral potential and investment opportunities were delivered.
- iii) Exhibited the mineral potential of the country during the Energy Week at Lugogo show ground. Ms. Sylvia Grace Nassaka (SDO) and Mr. Henry Ngada (Senior Staff Cartographer) participated in the MEMD energy week from 14-19th September, 2015 at Lugogo UMA parking lot, where minerals, rocks, geothermal activities, geological and mineral potential maps and the legal framework (Mineral policy, Mining Act and Regulations) were exhibited.



Figure 52: DGSM Exhibition at UMA Show ground, Lugogo

d. Geoinformation System management:

Management and update of geodata systems continued for the Geological and Mineral Information System, Library Management System (Libero), Unpublished Document Information System (UDIS) Electronic Record Management System and their intergration with the Mining Cadastre and Registry System (MCRS) to facilitate data search and retrieval.

e. Maintained linkages with both local and international organizations:

The Directorate through the geodata division continued to maintain linkages with the Geological Surveys of German (BGR) and UK through information sharing of publications. There was maintained collaboration with Geoinformation Communication Centre (GIC), Ntinda on GIS Data needs, management and maintenance of ArcGIS Software.

f) Challenges to Geodata Management

System maintenance to ensure timely geoinformation dissemination is the major challenge to the Directorate. Maintenance of the Information systems to facilitate data disseminated is urgently required or else the investment put in modernization of information systems at DGSM will be a lost. Lack of consumables like cartridges and papers for printers and plotters is also a hindrance to service delivery of the sector.

4.5.5 Laboratory Services

The Directorate continued to provide analytical services for rocks, minerals, ores, water as well as physical tests for rocks for Government and the private sector. The details of activities undertaken are as follows:

a) Sample preparations

Sample preparation for assay was undertaken of the following geological materials under prospecting, mineral exploration, and other research activities:

- i) Collected four (4) categories of bulk phosphate samples from Busumbu in Manafwa District for crushing and direct application on demonstration plots together with other agro-minerals under a pilot study being undertaken by the Agro-Geology Association of Uganda (AGAU) in partnership

with Mukono Zonal Agricultural Research and Development Institute (MUZARDI) on direct application of agro-minerals on agricultural land in Mukono District

- ii) Twenty three (23) soil sediment samples from mineral exploration activities in Namayingo District and Jinja District
- iii) One (1) sand sample from prospecting activities on the shores of Lake Victoria, in Jinja District
- iv) Thirteen (13) soil and four (4) samples from Moroto District
- v) Four (4) soil sediment samples received from staff geologists
- vi) Twelve (12) soil sediment and three (3) rock samples received from State House
- vii) Three hundred forty two (342) soil sediment, eleven (11) stream sediment, twenty eight (28) rock, three (3) alluvial, and one (1) slag sample from Uranium prospect in Ndale, Fort Portal, collected under the current Mineral Wealth and Mining Infrastructure Development Project.
- viii) One hundred eighty five (185) soil sediment samples from exploration activities in Kamalenge in Mubende District.

b) Sample analysis

A total of two hundred ninety nine (299) samples were analysed using different analytical techniques. Most of the analyses were for purposes of assessment of royalty payment and for samples from prospecting activities. Details of analyses are as follows, including the tables below:

- i) Five (5) sand samples from Jinja were analysed for Iron, Aluminium and Silica. The results show that three (3) of the samples have high silica content of 96 to 98% while the remaining two (2) have as low as 57 to 59 %.
- ii) Sixty one (61) geochemical samples from Mubende District were analysed for gold. The results indicated high gold concentrations in the range of 0.1 to 7 ppm.
- iii) Fifteen (15) more geochemical samples from Nakaseke District were analysed for gold. The results indicated high concentrations of gold in the range of 2 to 7 ppm.
- iv) Five (5) samples from Busia were analysed and results ranged from 1.3 to 16.15 ppm.
- v) Seven (7) soil sediment samples from Mubende were analyzed for gold and other metals. The results indicated a range of 2.5 to 36.86 ppm.
- vi) Three (3) wolfram samples from Kabale were analyzed for Tungsten content. The results indicated high concentrations in the range of 66 to 74% WO₃.
- vii) The results for gold purity analysis and coltan are presented in the tables below.

Table 24: Location, sample type and composition of gold

S/No	Location	Sample type	Number of samples	Composition (%)
1.	Buhweju	Gold nuggets and Gold bar	2	93.67 and 95.64 respectively
2.	Kabale	Gold bar	1	96.04
3.	Mubende	Gold nuggets	4	95 to 96
4.	Karamoja	Gold nuggets	3	95 to 97

Table 25: Location, sample type and composition for tantalum and columbite

S/No	Location	Sample type	Number of samples	Composition (%)
1.	Ntungamo	coltan	1	%Ta ₂ O ₅ , 29.33; %Nb ₂ O ₅ , 3.42

2.	Kayunga	coltan	1	%Ta ₂ O ₅ , 19.87; %Nb ₂ O ₅ , 71.90
3.	Ntungamo	coltan	1	%Ta ₂ O ₅ , 29.33; %Nb ₂ O ₅ , 3.42
4.	Kayunga	coltan	1	%Ta ₂ O ₅ , 19.87; %Nb ₂ O ₅ , 71.90

- One (1) rock sample from Hoima District was analysed and results recorded as follows: Au, 2.08 ppm; Ag, 0.18 ppm; Cu, 25.48 ppm; Co 3.66 ppm; and Fe, 58.2%.
- Six (06) geochemical samples from Morulem Sub-county in Abim District were analyzed for gold. The results indicated concentrations of gold in the range of 1.20 to 5.33 ppm.
- Thirteen (13) geochemical samples from Mubende District were analyzed for gold. The results indicated concentrations of gold in the range of <0.2 to 14.54 ppm.
- One (1) rock sample from the Democratic Republic of Congo was analyzed as follows: TiO₂, 60.32%; Fe₂O₃, 25.28%; Nb₂O₅, 0.03%; and Ta₂O₅, <0.01%.
- Two (2) sand samples from the outskirts of Lake Victoria in Jinja District were analyzed and the results were as follows: SiO₂, 95.75% and 94.77%; Fe₂O₃, 0.84% and 0.53%; and Al₂O₃, 1.94%, and 1.94%.
- One (1) soil and one (1) iron sample from Mubende District were analysed for gold and iron and the results were 2.17 ppm and 67.8%, respectively.
- Yellow nuggets from Mubende District were analyzed for gold but were found to be copper.
- Ten (10) geochemical samples from EL 1219 in Kenjojo District were analysed for gold and the results indicated concentrations of gold in the range of 1.62 to 5.88 ppm.
- One (1) iron sample from Kabale District analysed (Fe, 55.18%), one (1) soil sample from Ntwentwe, Kyankwazi District analysed (2.72 ppm of gold), and three (3) soil samples from Hoima District analysed (1.91, 2.86 and 1.82 ppm of gold).
- One (1) Ilmenite sample from an unknown location was analyzed for % Al₂O₃, % SiO₂, %TiO₂, and % Fe₂O₃ and the results were 2.695 %, 4.324 %, 60.044 % and 26.450 %, respectively.
- One (1) Bentonite sample from Kabale District was analyzed and the results are as shown in the table 26 below.

Table 26: Analyses of Bentonite sample

Sample Type	Constituents analyzed (%)									
	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	CaO	K ₂ O	TiO ₂	MnO	Fe ₂ O ₃	Na ₂ O
Bentonite	0.66	24.71	63.2	0.04	0.22	1.59	0.81	0.01	1.7	0.11

- One (1) coal sample from the Democratic Republic of Congo was analyzed and the results were as shown in table 27 below.

Table 27: Analyses of coal sample

Lab No	Client No.	%Al ₂ O ₃	%SiO ₂	%S	%CaO	%Ti	%Cr	%Mn		
JM 01	01	8.00	21.9	12.7	1.3	0.52	0.01	0.01		
Lab No.	Client No.	%Cu	%Zn	%As	%Nb	%Mo	%Ta	%MC	%AC	%VC

JM 01	01	0.002	0.002	0.001	0.001	0.01	0.001	5.8	17.5	31.5
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- One (1) Copper tailings sample from Jinja District was analyzed and the results were as shown in table below.

Table 28: Analyses of copper sample

Lab No.	Client No.	% Cu	% Co	%Fe ₂ O ₃	% CaO	%SiO ₂
AG 01	01	12.00	0.8	11.6	7.8	47.6
AG 02	02	3.71	0.00	0.71	62	-

- Three (3) soil samples from Mayuge, Namagunga, and Kyambogo were analysed and the results are as shown in the table below.

Table 29: Analyses of soil samples

Lab/No	Customer/No	% SiO ₂	% Al ₂ O ₃	% Fe ₂ O ₃	% P ₂ O ₅
EW-A	A (Mayuge)	43.22	26.61	8.55	0.11
EW-B	B (Namagunga)	36.25	26.89	14.87	0.12
EW-C	C (Kyambogo)	41.57	33.03	9.94	0.10

- One (1) wolfram sample was analysed for WO₃, 63.01%,
- One (1) Columbite-Tantalite sample from Ntungamo District was analyzed for Ta₂O₅ and Nb₂O₅, with 43.88% and 28.10% respectively.
- One sample from an ungiven location was analyzed for Ta₂O₅ and Nb₂O₅ and assayed 43.96% and 28.14%, respectively.
- A wolfram sample from Lyantonde analysed 41.5 % WO₃; a sample from Isingiro analysed 52.43 % Sn; and a sample from Karamoja assumed to be gold was analysed and identified as copper.
- One (1) iron ore and (1) tungsten sample from Nyamuliro in Kabale District were analysed for %WO₃ and %Fe₂O₃ with the results as 0.01% WO₃ and 94.00% Fe₂O₃; and 63.87% WO₃ and 27.63% Fe₂O₃, respectively.
- One (1) Coltan sample from Arua District was analysed and the results were as follows: Nb₂O₅, 63.68 % and Ta₂O₅ 8.83%.
- One (2) Coltan sample from Ntungamo District was analysed and the results were: Nb₂O₅, 49.83% and 57.80% and Ta₂O₅, 20.14% and 15.2%, respectively.
- Two (2) Coltan samples from an unknown destination were analysed and the results were as follows: %Ta₂O₅ and %Nb₂O₅, 15.73 and 56.26; and 37.8 and 35.10, respectively.
- One (1) Coltan sample from Mityana District was analysed and the results were as follows: Nb₂O₅, 7.01 % and Ta₂O₅, 6.01%.
- One (1) copper metal and (1) copper ore sample from Zambia were analysed for %Cu and the results were: 89.25% and 7.19%, respectively.
- One (1) Iron ore sample from Parambo in Pakwach District was analysed and the result was 94.21 %Fe₂O₃.
- One (1) cassiterite ore sample from Isingiro District and one (1) rock were analysed and found to contain 53% Sn and 46.02% Sn, respectively.

- Three (3) wolfram samples from Nyamuliro mine were analysed for %WO₃ the results were as follows: 56.08%, 54.00% and 54.35%.
- One (1) rock sample from Mubende District was analysed for %WO₃ and % Fe₂O₃ and the results were 42.31% and 45.14%, respectively.
- One (1) tungsten and one (1) iron ore sample from Nyamuliro in Kabale District were analysed and the results were as follows: 63.87% WO₃, 27.63% Fe₂O₃ and 0.01% WO₃ and 94.00% Fe₂O₃, respectively.
- Two (2) sand samples from Jinja District, Lake Victoria Outskirts were analysed and results were as follows: %SiO₂ 77.62 and 87.41, %Fe₂O₃ 1.58 and 0.57, % Al₂O₃ 1.07 and 0.87.

Table 30: Location, sample type and composition for gold

S/No	Location	Sample type	No. Sample	Composition (%)
1.	Buhweju	Gold bar	5	91.78, 89.23, 97.41, 87.50, 97.10
2.	Mubende District	Gold bar	8	93.66, 94.61, 95.10, 94.34, 2.64 ppm, 8.54 ppm, 3.11 ppm, 3.86 ppm
3.	Karamoja District	Gold bar Gold nuggets	8	93.80, 86.35, 93.63, 89.61, 96.60, 93.50, 89.11, 93.10, 96.10, 95.83
4.	Not given	Gold	1	95.62, 80.51
5.	DR. Congo	Gold nuggets	2	96.02, 94.60
6.	Kunungu	Gold nuggets	1	96.66
7.	Bugiri District	Gold dust	1	89.61
8.	Amudat District	Gold bar	1	94.61

Table 31: Location, sample type and composition for composition of the samples

Sample Type	Constituents analysed (%)									
	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	CaO	K ₂ O	TiO ₂	MnO	Fe ₂ O ₃	SO ₃
Limestone	5.65	0.36	15.59	0.74	57.10	<0.01	<0.01	0.29	4.83	<0.01
Hima cement Ltd	3.28	0.32	12.79	0.63	53.09	<0.01	<0.01	0.25	5.38	<0.01
	4.44	0.19	15.56	0.63	52.19	<0.01	<0.01	0.23	6.22	<0.01
Rock (Moroto)	25.18	<0.01	0.01	0.50	44.91	<0.01	0.05	0.02	0.41	<0.01
Rock Mubende	1.93	40.21	44.11	<0.01	0.03	0.83	0.04	0.001	0.66	<0.01
	<0.01	28.49	49.49	<0.01	0.16	5.16	0.48	<0.01	6.05	0.08
Pozzolana Kasese	3.21	0.19	0.11	0.58	65.30	<0.01	0.04	<0.01	0.42	<0.01
	3.39	4.92	31.49	0.81	21.43	<0.01	1.59	<0.01	6.75	0.09
	3.28	0.20	0.01	0.79	60.87	<0.01	0.03	<0.01	0.53	<0.01
	<0.01	0.28	0.09	1.65	62.37	<0.01	0.12	0.01	0.63	<0.01
	<0.01	0.46	0.22	1.06	61.77	<0.01	0.25	0.03	1.25	<0.01
	<0.01	0.15	0.31	0.82	57.14	<0.01	0.08	0.02	0.44	<0.01
Rock Hoima	-	2.66	60.58	-	-	-	0.02	1.61	38.14	-

Table 32: Location, sample type and composition for gold

S/N	Location	Sample type	Composition (%)
1	Rwanda	Gold dust	91.35
2	Democratic Republic of Congo	Gold nuggets	93.81

3	Busia	Gold bar	91.45
4	Mubende	Gold nuggets	96.01, 93.89
5	Karamoja	Gold nuggets	96.85, 95.89, 94.56
6	Masindi	Gold bar	93.6

Table 33: Location, sample type and composition for gold in geochemical samples

S/N	Location	Sample type	Composition (ppm)
1	Nakasongola District	Geochemical samples	0.27, 0.26, 0.37, 0.29, 0.26, 0.36, 0.27, 0.41, 0.54, 0.35, 0.53
2	Zombo District	Geochemical samples	0.36, <0.2

Table 34: Location, sample type and composition of rock material in ppm and %

S/N	Location	Sample type	% composition				
			Au (ppm)	Ag (ppm)	Cu (ppm)	Co (ppm)	% Fe
1	Hoima	Rock	2.08	0.18	25.48	3.66	58.2

Table 35: Location, sample type, and composition of sandstone, rocks and sand samples

S/N	Location	Sample type	% composition							
			SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	K ₂ O	TiO ₂	CaO	P ₂ O ₅	MgO
1	Isingiro	Rocks	73.50	22.13	1.54	-	0.55	0.07	<LOD	<LOD
			86.31	4.29	6.83	-	0.10	0.01	0.05	<LOD
2	Democratic Republic of Congo	Rocks	3.67	-	9.34	-	4.74	-	-	-
3	Kabale	Rock	10.101	1.08	78.41	-	6.11		0.06	
4	Zombo	Geochemical	45.12	24.63	5.16	1.76	0.56			1.67
			50.47	18.55	5.63	-	0.63			1.69
5	Rukungiri	Rock	77.10	-	0.84	-	-	6.63		
			84.43		0.75			4.52		
			96.23		2.14			0.13		
			95.31		1.70			0.063		
6	Masaka	Sand sediment	88.03	1.61	1.26	-	-	-	-	-

Table 36: Location, sample type, and composition of soil samples in ppm and percentage (%)

S/N	Location	Sample type	Composition in ppm and %										
			Au, ppm	S, ppm	Ba, ppm	Rb, ppm	W, ppm	% CaO	% TiO ₂	% SiO ₂	% Al ₂ O ₃	% K ₂ O	% Fe ₂ O ₃
1	Mubende	Soil	<0.2	413	682	157	145	0.07	0.08	58.65	32.18	1.63	1.37
2	Mubende	Soil	<0.2	235	351	116	175	0.12	0.68	64.02	18.49	2.22	2.06

3	Ntventwe, Kyankwazi District	Soil	2.72	-	-	-	135	0.56	1.73	43.15	21.91	0.76	16.42
4	Mayuge	Soil	-	-	-	-	-	-	-	43.22	26.61	-	8.55
5	Namagunga	Soil	-	-	-	-	-	-	-	36.25	26.89	-	14.87
6	Kyambogo	Soil	-	-	-	-	-	-	-	41.57	33.03	-	9.94

c) Equipment acquisition and Installations

The installations of the equipment were undertaken to improve and maintain mineral laboratory analytical methods and mineral beneficiation study techniques available in the mineral sector and to the mining industry:

- i) slurry pump, pulp density balance, vacuum pump, jones riffle sample divider, and gold cyanidation test reagents, digital titrators, analytical balances, spectrophotometers, Fire assay equipment, water purification unit, high temperature oven, and a furnace with accessories for fire assay. Also procured were chemicals and standard to be used in the analysis.
- ii) The re-installation and calibration of five (5) fume-hoods and three (3) scrubbers in the analytical laboratories was accomplished.
- iii) The installation of the un-interrupted power system (UPS) and stabilizer for the Atomic Absorption Spectrophotometer (AAS), X-ray Fluorescence Spectrometer, Fluxer, and automatic digital titrator was accomplished.
- iv) The development of analytical methods for the auto digital tirator was undertaken.
- v) An inventory of laboratory equipment was prepared.
- vi) Maintenance, repair work, calibration and refresher user training for the benchtop X – Ray Florescence Spectrometry commenced. However, contractor found two (2) components to have gotten damaged, thus, requiring replacement.

4.6 Mines

The Department of Mines (DM) attracts private investment in mineral exploration and development through the management of an equitable and secure mineral rights system for the mining industry. The DM carries prime responsibility for regulating minerals resources in Uganda, the collection of royalties, and ensuring that safety, health and environmental standards are of the highest standard and are consistent with relevant Uganda legislation, regulations and policies. The DM is committed to educating the community about mineral resource development and regulation in Uganda and ensuring the continued growth of the mining industry to maximize the economic and social return to all Ugandans. The outputs under the department are outlined under: Legislative and Policy matters; Provision of services, license administration and Monitoring and Inspection of investments; and Geoscience data and information systems management.

4.6.1 Legislation and Policy Matters

A workshop was held between the Directorate of Geological Survey and Mines and the World Bank from the 1st to 4th day of December, 2015 to finalize the draft Green paper on the Minerals and Mining policy, Cabinet memo on the principals for the policy review and Cabinet memo for the principles to be embodied in the Mining Act amendment, 2016. Documents were finalized and submitted to Ministry of Energy and Mineral Development top management for further review before a final stakeholder consultative workshop is held.

4.6.2 Provision of Services

During the year 2015, the department provided services as follows:

- Attended to clients, including members of staff, investors and the general public. These clients were advised on technical issues, regarding the Mining Act 2003, Mining Regulations, 2004 and availability of areas for licensing for different mineral commodities
- Promotion of the sector among the public by offering legal and technical advice
- Received and analyzed quarterly reports for exploration operations, evaluated progress and offered technical guidance on how to improve performance
- Compiled mineral statistics and updated the mineral statistics records
- Assessed and collected revenues
- Reviewed applications for mineral rights, work programs and project briefs submitted by applicants
- Acquired data and information during inspections, produced and filed reports for relevant actions, compiled geo-scientific data and updated the mining cadaster and web portal

4.6.3 Mineral Licensing

The following licenses were granted during the calendar year 2015. The licenses include those granted during the period and those that were still valid over the period. Noticeable is the fact that we received an overwhelming number of applications for Prospecting and exploration Licenses as a direct result of the interpreted airborne geophysical data undertaken during SMMRP and the implementation of the Mining Cadastre. Subsequently, a total of 818 were operational during the year; these included 153 Prospecting Licenses (PLs), 499 Exploration License (ELs), 43 Location Licenses (LLs), 39 Mining Leases (MLs) and 81 Mineral Dealers Licenses (MDLs). However, 2 exploration Licenses were revoked for non-compliance with the Mining Act.

Table 37: Mineral Licensing Status January – December, 2015

Type of License	Status as at 01/01/2015	Granted	Renewed	Expired	Revoked	Status as at 31/12/2015
Prospecting	179	140	N/A	175	0	153
Exploration License	487	136	39	155	2	499
Retention License	3	0	0	0	0	3
Location	43	19	5	22	0	43
Mining Leases	36	3	0	0	0	39
Mineral Dealers*	0	81	N/A	0	0	81
Total	748	379	44	352	2	818

*License expires on the 31st day of December of the year of issue

a) Non-Tax-Revenue (NTR)

NTR collected was worth UGX **3,961,901,063** during the Fiscal year 2015 from licensing of mineral rights as compared to UGX **5,392,397,577** that was generated in the previous year. Details of the non-tax revenues assessed and collected are shown below.

Table 38: NTR assessed and reported collected (January – December 2015)

Amount in UGX						
S/No.	Details of NTR	Q1 Jan-March	Q2 April-June	Q3 July-Sept	Q4 Oct-Dec	Total 2015
1.	Prospecting license fees	7,800,000	1,800,000	5,000,000	4,000,000	18,600,000
2.	EL fees and Rents	137,399,000	29,840,000	84,940,000	60,930,000	313,109,000
3.	Location fees and rents	3,450,000	2,050,000	9,850,000	2,350,000	17,700,000
4.	ML/SML fees and rents	80,260,000	80,100,000	0	141,760,000	302,120,000
5.	Mineral Dealers license fees	15,000,000	18,000,000	40,500,000	18,000,000	91,500,000
6.	Retention Fees and Rents	0	0	2,100,000	0	2,100,000
7.	Goldsmith License fees	0	0	3,000,000	0	3,000,000
8.	Royalties	923,792,215	721,935,650	393,249,089	1,163,445,596	3,202,422,550
9.	Import Fees	184,268	0	11,165,245	0	11,349,513
	Total	1,167,885,483	853,725,650	549,804,334	1,390,485,596	3,961,901,063

b) Mineral Statistics

i. Mineral Production

The value of mineral produced and reported during the calendar year 2015 was UGX 171 Billion.

Table 39: Mineral Production for January to December 2015

Mineral	Average Price per Tonne in 10 ³ UGX, 2015	Production in Tonnes 2015				Quantity in Tonnes		Average Value in 10 ³ UGX	
		Jan -Mar	April-June	July-Sept	Oct- Dec	CY2014	CY2015	CY 2014	CY 2015
Limestone	120	302702.1	250553.9400	336313.56	277172	1,090,240.26	1,166,741.33	130,828,831	140,008,992
Pozollana	21	200554.81	196408.0400	173008.24	192797	742,423.12	762,768.19	15,590,886	16,018,130
Gold	117,291	0.0103863	0.0016	0.00063104	0.0000728	0.0244	0.01	2,860	1,488
Vermiculite	579	627.8	0.0000	0	585.4	2660.75	1,213.20	1,540,574	702,443
Cobalt**	80,429	0	0.0000	0	0	0.00	0.00	0	0
Wolfram	34,575	31.4	14.0000	0	0	79.63	45.40	2,753,034	1,569,705
Syenitic Aggregate	1.5	9654.1	17078.8400	29761.9	26220.8	64,603.84	82,715.64	96,906	124,073
Kaolin	100	18636.29	8140.5100	7919.97	6077.27	46,286.02	40,774.04	4,628,602	4,077,404
Iron Ore	271.29264	4000	3000.0000	2000	0	41,959.00	9,000.00	11,383,168	2,441,634
Gypsum	100	0	0.0000	0	0	-	-	0	0
Lead	5000	0	0.0000	0	0	-	-	0	0
Coltan (30% Purity)	28,413	0.367	0.0000	0	0	0	0.37	0	10,428
Tin (75% Purity)	34,034	19	63.0000	74	24.3	44.5047	180.30	1,514,673	6,136,330
Beryl (1% Beryllium)	8,715	0	0.0000	0	0	-	-	0	0
Manganese (Above 46% Mn)	3,037	0		0	0	0	0.00	0	0
Grand Total								168,339,533.8	171,090,627

*Average price of gold on LME and average URA monthly fixed exchange rates were used to compute the average value of gold (and other minerals) over the year.

Note: This information was compiled from data available by the time of compiling this report

ii. Mineral Exports

The value of mineral exports for the year 2015 was worth UGX 5.9 billion as shown below:

Table 40: Mineral Exports as per Permits issued and for minerals produced in year 2015

Commodity	Quantity (Kg)					Value (UGX)
	Jan - Mar	Apr - Jun	July - Sep	Oct - Dec	Total	
Coltan	-	-	-	6,128	6,128	275,185,535
Copper	-	-	-	-	-	-
Gold	-	-	10.5	2.42	12.92	1,444,742,006
Iron Ore	4,000,000	1,000,000	4,000,000	-	5,000,000	675,000,000
Tantalite	-	-	-	128	128	20,068,246
Tin	-	-	-	20,200	20,200	472,808,669
Tourmaline	-	-	7	-	7	18,426,800
Wolfram	10,333	-	78,741	64,772	153,846	3,026,425,569
Total						5,932,656,825

All minerals are mined in the course of prospecting, exploration, mining and mineral beneficiation operations. The produced minerals are subject to the payment of royalties on the gross value based on the prevailing market price of the minerals. These are then exported or consumed domestically. Any person may acquire an import permit (issued only on payment of the prescribed fee) to import minerals into Uganda (either for domestic consumption or for re-export), on conditions prescribed by the Mining Act 2003 and specified in the permit and is required to make a declaration before a customs officer regarding the type and quantity of minerals imported, after which the customs officer shall certify the import permit.

Before any minerals are **re-exported from Uganda**, the relevant import permit is surrendered to a customs officer who then submits it to DGSM. The **importation of minerals for re-export** explains why in some cases the quantity produced is much less than that of the exports for some commodities such as gold. In instances where the amount **exported** is less than that produced, the reason then is that some of the produced material has been stock piled as means of controlling the effects of commodity price fluctuations especially for commodities such as cobalt.

iii. Mineral Imports

During the period under review, the only import recorded was gold worth UGX 1,226,324,569 from Southern Sudan.

Table 41: Mineral Imports as per permits issued for year 2015

Commodity	Quantity (Kg)					Value (UGX)
	Jan - March	Apr - June	July - Sep	Oct - Dec	Total	
Gold	-	-	10.5	-	10.5	1,226,324,569
Total						1,226,324,569

The Gold imports to Uganda were from South Sudan. The companies currently licensed to deal in minerals produce verifiable certificates of origin of the minerals and respective export permits from the originating country before the DGSM issues them import permits in the process of importing minerals into the country. MEMD has established this as a vital step in conducting due diligence on the suppliers of these companies or individuals.

4.6.4 Monitoring and Inspection of Mining Investments

Field Inspections and Monitoring

Field inspections are carried out to offer technical advice, monitor and supervise the exploration, mine development and mining activities of the private mineral sector operators.

a) Western Region

i. Bushenyi District

Sino Minerals, Bushenyi district (ML 1355)

The Directorate conducted an inspection on M/s Sino Minerals Investments to ascertain their development and operational status as per approved feasibility report and workplan. It was established that the company has suspended its mining operations without due notice to the Directorate. The company was advised to adhere to the terms and conditions in the Mining Lease.

ii. Isingiro District

African Panther Resources Limited (ML 1433)

The Directorate monitored the exploration, mining operations and development under M/s African Panther Resources (U) Limited in Kikagati in Isingiro District. The company has made steady progress in the installation of equipment for tin processing. At the time of inspections a gravity concentration plant was being installed. The plant is to comprise of the following equipment: a double rolls crusher; vibratory screens, one (1) triple decker and the other double decker; a spiral classifier; simplex circular jigs, two (2) of bigger size and another one of smaller size; a spiral concentrator consisting of six (6) 15 turn triple start spirals and two (2) 9 turn triple start spirals; and eight (8) shaking tables. The plant's throughput is aimed at 25 to 30 tons per hour of tin ore and African Panther Resources Limited has hired a private traceability company to certify its tin before shipment.



Figure 53: Shaking tables (left) and spiral concentrator (right) installed at Isingiro Tin Mine Project



Figure 54: Left: Company store in rented building outside the project site; Right: 3T's mineral traceability tag on one of the bags in the store ready for shipment

iii. Kabale District

Kirwa Mines, Kabale district

The inspections of Kirwa wolfram mine established that illegal mining is still continuing at the Mine. The team conducted sensitization of the ASMs, district authorities, customs officials and the police. The police was reminded that Kirwa Wolfram Mine is a Government protected area and as such has a role of providing security for a government protected area. The Police was also instructed to impound any Wolfram mined illegally from the protected area and that mined from other location licenses (LLs) is to be declared to Kabale Mines Inspectorate and returns filed with DGSM for computing royalties. Customs officials were advised to be vigilant to require authentic documents.

Nyamuliro Wolfram, Muko and Buhara iron ore deposits in Kabale

The team from GSD and Mines Department undertook a reconnaissance trip to Nyamuliro wolfram, Muko iron ore and Buhara iron ore prospects, in Kabale district from 25th to 29th March 2015. During the survey they established that exploration and mining activities had slowed down, due the total ban imposed on export of unprocessed raw minerals.

Krone (U) Ltd (ML4478) - Investigation on the status of the mine and its operations was conducted. The team established that workers were on strike and mining operations were suspended. M/s Krone (U) Ltd was also experiencing an ongoing standoff and subsequent negotiations were ongoing between the company and M/S Avan Group FZE which had created a capital investment interest under a proposed joint venture with arm's length transaction objectives.

iv. Kamwenge District

Dura limestone mine in Kamwenge district

A team comprising of Mr. John Kennedy Okewling (Mining Engineer), Mr. Mathias Mugere (Assistant Inspector of Mines) and Mr. Gideon Amunyo (O/C of Mbarara Mines Office) carried out a verification of boundaries of land in respect to the Mining Lease at Dura in Kamwenge District. Together with the Ministry of Lands, Housing and Urban Development, the boundaries

of lands in relation to the Mining Lease, ML0248 were ably established. A report was filed to that effect.

v. Kisoro District

Great Lakes Iron and Steel Company Limited - Investigation of implementation status of mining operations feasibility was conducted. The team established that there was no work on ground although the company claims to carry out further exploration drilling within the designated mining area to further define the extent of mineralisation and iron ore reserves within. This claim was not supported by any report or documentation. The ML is recommended for suspension/termination.

vi. Ntungamo District

Euro Minerals, Ntungamo district (ML1466): A team comprising of Mr. Godfrey Bahati (Assistant Commissioner, Laboratories), Mr. James Francis Natukunda (Acting Assistant Commissioner, Geology), Mr Jackson Mayanja (Mining Engineer), Mr. Mathias Mugere (Assistant Inspector of Mines) and Mr. Gideon Amunyo (O/C of Mbarara Mines Office) carried out a surface rights verification for a mining lease application in Ntungamo District by Euro Minerals Limited. The mineral right holder was found to be compliant with the surface right. Euro Minerals continues to make steady progress on the mine development. The company has cut an access road to secure the area for exploration drilling.

BNT Mining Company at Kakanena in Ntungamo: Inspection and verification of columbite – tantalite processing plant installation was carried out. The inspections established that the company is still conducting test runs on the processing plant and stockpiles of about 10 tonnes were found on site.

Mwerasandu Mines, Ntungamo District

A team comprising of Mr. Joseph Okedi (Principal Inspector of Mines), Mr. John Kennedy Okewling (Mining Engineer), Mr. Morris Muheirwe Tabaaro (Inspector of Mines), Mr. Mathias Mugere (Assistant Inspector of Mines) and Mr. Gideon Amunyo (O/C of Mbarara Mines Office) carried out a general inspection at Mwerasandu tin mine in Ntungamo District and Buyaga wolframe in Lyantonde District. The team confirmed existence of illegal mining activities observed at Mwerasandu tin mine under M/S Zarnack Holding Company Limited. It was noted that Zarnack holdings failed to manage the mining lease area, and their irregular mining sequence has accelerated illegal mining and smuggling of tin from the mining lease area.

Hence M/S Zarnack Holdings Company Limited was instructed to take full responsibility of managing the mine, employ a public relations officer to coordinate the activities of the company and the community and also an environmental audit to be undertaken on the activities of the company. Another follow up inspection was conducted at Mwerasandu Tin Mine to arbitrate the conflict between miners and landowners who had formed a memorandum of understanding with company. The local indigenous people working in the mine needed to know the status of land ownership at the mine.

b) Karamoja and Eastern Region

Karamoja region

A team comprising of Muheirwe Morris Tabaaro (Inspector of Mines), Muhindo Patrick (Ag. Senior Economist) and Allen Kihunde (Economist) undertook a field inspection of mining sites in the Karamoja Region. This was a joint inspection comprising of DGSM staff and staff from the Ministry's Sector Planning and Policy Analysis Department (SPPAD). John Kennedy Okewling, Mining Engineer (O/C Karamoja) carried out general risk assessment in Karamoja Region visiting and meeting with the Districts Authorities in all the districts of the region, it was affirmed by all the Districts Authorities that the current status of security was safe and cannot hinder any Government program. M/S Tororo Cement Limited was encouraging overloading of trucks ferrying marble to Tororo Cement Plant in Tororo. A meeting among the stakeholders was recommended to address the issue of overloading.

i. M/S DAO Marble Limited, Moroto District

The inspection team established that the company extensively employs foreigners at the mine with Ugandans only being employed as cooks, helpers, casual labourers, a driver and a coordinator of welfare operations at the mine.

ii. Mechanised Agro (U) Limited in Moroto (LL1467 and 1468)

A team from the Directorate undertook inspection on operations of LL1467 and 1468 under Mechanised Agro (U) Ltd. It was established that the company failed to adhere to the legal limitations in regards to the level of activities to be undertaken in a specific type of license, which is tantamount to hazardous operations that do not promise a future for the mineral sector. The Mining operations for the last one month yielded over 50 blocks estimated at 10 tons per block although it was indicated that current operations were for test runs and extensive operations to commence after grant of mining lease. The company was advised to urgently acquire a mining lease or comply with the provisions granted under the Location License.

iii. Artisanal Mining Operations in Amudat District

The Directorate conducted investigation of the status of operations of ASMs in Amudat district and established that Artisanal Operations were mainly in three different villages; Riantum Village, Cheptakol Village and Kabiosha Village all in Lokaless Parish, Karita Sub-County. The Artisanal Mining operators had resorted to the use of brute force for blasting at the mining areas. The Artisanal Mining operators were sensitized on legality of their operations in the mining sector and they (miners) promised and have started the process to formalize their operations.

c) Eastern Region

Bududa District

The Directorate conducted inspections on the operations of ML 0127 by M/s Tororo Cement (U) Ltd. (TCL). The team established no evidence of any mining activity in the area and Surface rights are not secured for the mining operations. TCL was advised to secure surface rights or provide proof that the company has secured the surface rights of the land the subject of ML 0127 and commence mining operations as per terms and conditions of the lease.

Namayingo District

Illegal Mining in Namayingo

The Directorate conducted a field visit at Nakudi, Busuma and Bude gold mines where there was a reported gold rush, by artisanal miners in Namayingo district. The purpose of the field visit was to investigate, document and inspect the newly opened operations, and sensitize the artisanal miners on the mining best practices for health and safety and efficient ways to maximize gold extraction. During a short survey, it was established that artisanal and small scale miners had exploited three N-S trending shear zones. This illegal activity has complicated exploration activities of one of the Exploration License holders M/s Milu (U) Limited. The ASMs were sensitized about the current operations; and Health and Safety issues that could be associated with the current mode of mining operations.

Inspections in the three affected gold rush areas were conducted by a team comprising Ms. Agnes Alaba, Ag. Assistant Commissioner (Geodata), and Mr. Rudigizah Chris, Ag Assistant Commissioner (License Administration). The team confirmed the massive illegal mining activity in the affected areas and tasked the office of the RDC and DPC to stop all illegal migration and mining in the district. The District Administration was also tasked to carry out registration and profiling of all ASMs that will be used as a basis for licensing the associations and groups of ASM in the area.

Quarterly follow ups have been undertaken and the district is currently undertaking profiling of ASMs in the area before the Ministry regularizes their operations.

Kapchorwa District

Kampala Cement, Kapchorwa District (TN2186)

Mr. Zachary Baguma (AC/Geology), Henry Ngada (Ag. P/Geoscientist), and Mathius Mugere (AIOM) undertook a surface rights verification exercise in Kapchorwa (as a requirement for grant of a Mining Lease) on 11th September 2015 regarding the mining lease application (TN2186), belonging to Kampala Cement Limited. Inspections revealed that the company had secured surface rights and needed to submit a deed plan for the area in respect of Mining Lease application in the names of Kampala Cement.

Tiira, Busia

The Department monitored the exploration, mining operations and development under Greenstone Resources Ltd in Tiira, Busia District, Tiira Artisanal and Small Scale Miners (ASM) in Tiira, Busia District.

Tororo District

The Department monitored the exploration, mining operations and development under M/s Guangzhou Dong Song Energy Group Company Ltd in Tororo District.

Manafwa District

The Department monitored the exploration, mining operations and development under M/S Namekara Mining Limited in Manafwa District.

d) Central Uganda

The Department monitored and assessed the impact of illegal transactions, mineral smuggling and sensitized stakeholders to address the above mentioned issues. Gold mining and trade camps were

noted in eight sites in Mubende and Singo gold fields namely: Kayonza, Bukuya, Lugigi, Masaka, Kamelenge (coded as Kampala), Kapya, Walukwago, Kabaada (Newest) and Kayimbirimi.

Lyantonde District (LL0502)

Majest-com.com, Lyantonde district

M/S Majest.com Limited is carrying out large mining operations as seen at site but has declined to submit the respective returns to the DGSM. The company failed to adhere to the legal limitations in regards to the level of activities to be undertaken in a specific type of license, which tantamount to hazardous operations that does not promise a future for the mineral sector. Hence it was recommended for M/S Majest.com Limited to be tasked to submit all production statistics and to apply for a Mining Lease.

e) Northern Uganda

The Department monitored the impact of mineral smuggling and sensitized Customs personnel. Three Customs areas in West Nile Region were visited and engagements and collaborations were initiated. These are Oli and Vurra Customs points in Arua District; and Goli Customs point in Zombo District.

f) Flagship Projects

i. Sukulu Phosphate and steel project

The Directorate continued to monitor the development and operations of the Sukulu Phosphate Comprehensive Industrial Development Project. The project achieved financial closure at the 2015 FOCAC (China-Africa) summit in South Africa. The company is undertaking civil works where the machinery will be installed, construction of the administration block and staff housing is ongoing. It is expected that the first batch of the processing plant equipment will be shipped from China by the end of the Financial Year 2015/2016.

ii. Kilembe Mines, (Tibet Hima Mining Company limited – Kilembe Mines Concessionaire) Kasese District

Monitoring was carried out for the development and operations of the Kilembe Project under Tibet Hima Mining Company Limited (THMICOL). A team comprising of Mr. Joseph Okedi (Principal Inspector of Mines), Mr. James Francis Natukunda (Principal Geologist Exploration), Mr John Kennedy Okewling (Mining Engineer), Mr. Mathias Mugere (Assistant Inspector of Mines) and Mr. Gideon Amunyo (O/C of Mbarara Mines Office) carried out an inspection on EL0601 in Kihyo in Kasese District. It was noted THMICOL is holding an exploration concession without proper exploration activities as planned in the approved exploration work program, and hence recommended against the renewal of the license.

The Directorate on 2nd October, 2015 received and reviewed the Feasibility Study Report (FSR) for Kilembe Copper and Cobalt mine. The review found the FSR lacking in many areas including approved Environmental and Social Impact Assessment by NEMA; initial mine development plan; Skills and Technology Development Plan; Project linkages plan capturing technical and financial standpoints; and how a smelting plant or any other downstream processing alternatives will be established and contravenes many sections in the mining law and Concession Agreement. The DGSM recommended the Minister to issue a “Disapproval Notice” (Clause 5.7.5 of CA) to the Concessionaire, citing the substantial insufficiencies in the FSR and asking THMICOL to take remedial action and resubmit the FSR. Consequently, renewal of SML 2151 is conditional to the

responses and actions of THMCOL and its compliance to the working obligations under the mineral right.

4.6.5 Mines Geoscience Data and Information Systems Management

The Geoscience Division is responsible for geoscience data and information systems management in the Mines Department. It integrates spatial data with technical data and administrative records for mineral rights, ensuring an updated Mining Cadaster and Registry System database. Detailed activities carried out during the period include:

a) Data Capture, updating and Systems maintenance of the Computerized Mining Cadastre and Registry System

Updated and maintained geoscience databases and Mining cadaster and Registry System as follows:

- Captured Meta data for one hundred ninety three (193) new applications for mineral rights/licenses into Flexi Cadaster. An application receivability notification including the geographical area was generated for each application.
- Scanned all documents accompanying one hundred ninety three (193) new applications for mineral rights and twenty four (24) applications for renewal of licenses and uploaded them into the Mining Cadastre and Registry system (MCRS) for review.
- Prepared one hundred and eighty five (185) title prints for granted Exploration, Location and Mining licenses.
- Carried out quality control of mining cadastre database and detailed information not given on the application form for both the company and contact person such as physical address, email address, telephone Numbers, website, was added for one hundred and fifty nine (159) licenses to ensure an updated 'Sequel Server Report' (SSR) summarizing the License data from FlexiCadastre. Reconciliation was made of the above license paper records with digital data into flexicadastre.
- A recommendation was made to add "Transferred Date" field in FlexiCadastre system (date when a mineral right/license changed to current ownership) and "Fee: Transfer Granting" action to improve and ensure an up dated concession holder statistics.
- **Statistics on status of digital data capture into flexicadastre:** All the mineral digital data updated into flexicadastre can be searched to obtain statistics on status of digital Meta data capture. The table below shows the number of licenses (as of 31st December 2015) uploaded in the Cadastre.



License and Agreement Status Report as of 31 Dec 2015

1. Licence Statuses

Type Group	Type	Status Group	Status	Total
Exploration	EL	Active	Active	513
Exploration	EL	Active	Pending Renewal	70
Exploration	EL	Application	Application	239
Exploration	EL	Application	Approved for Granting	9
				831
Exploration	RL	Active	Active	4
				4
Mining	LL	Active	Active	54
Mining	LL	Active	Pending Renewal	12
Mining	LL	Application	Application	36
				102
Mining	ML	Active	Active	36
Mining	ML	Active	Pending Renewal	1
Mining	ML	Active	Pending Transfer	1
Mining	ML	Application	Application	10
				48
Total				985

b) Spatial data validation, maintenance and integration

Spatial data was reviewed for all new and renewal applications for mineral rights to ensure no overlap with other licenses. There was validation of shapes/geographical area for four hundred and twenty seven (427) mineral rights licenses applications for various mineral commodities to check availability of area for mineral rights and compliance to technical and legal requirements. For applications with shapes overlapping with other licenses an area adjustment notification including the geographical area was generated inquiring if the applicant is willing to retain the remaining percentage of the applied area.

c) Spatial data of geographical areas applied for mineral rights was plotted and integrated with geographic information to produce maps for the application receivability and area adjustment notifications.

d) Records management and geoscience data/Information/Knowledge Dissemination

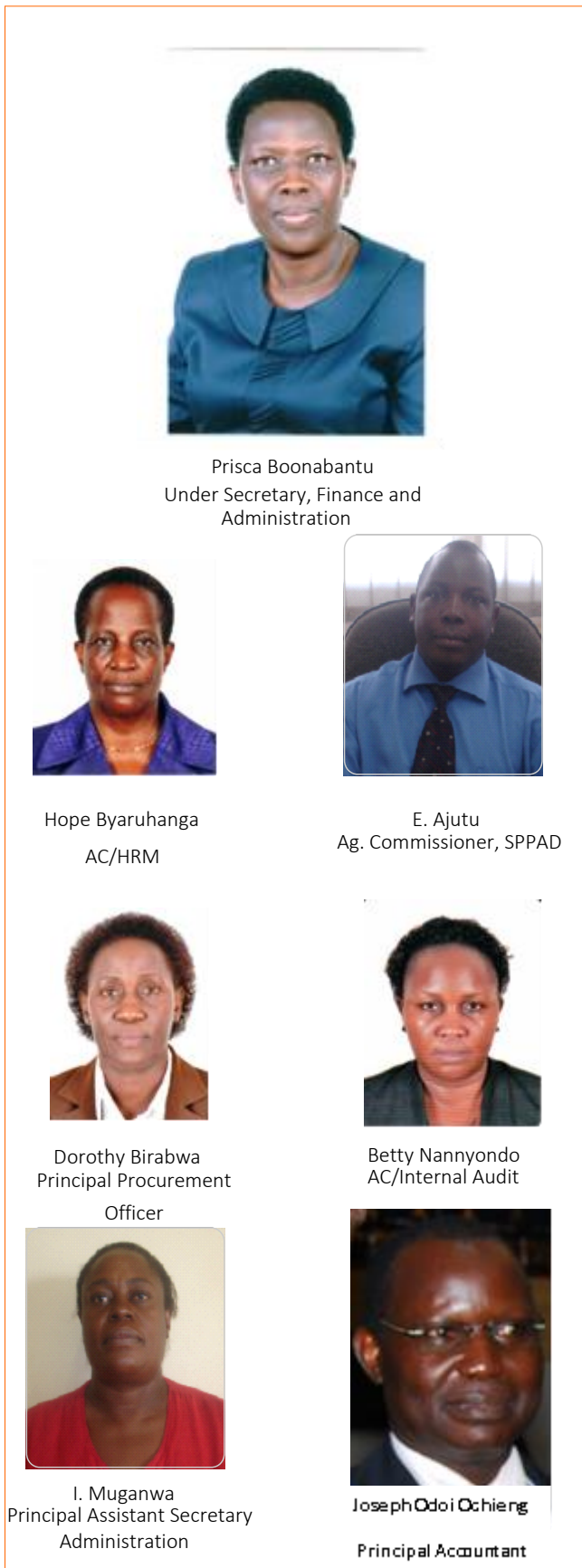
- Continued to provide advice on proper storage and re-organization of hard copy files towards the establishment of a well-organized Mining Record Center.



Figure 55: Reconciling the paper copy records with digital records in Flexi Cadastre

- Concession/mineral right holder's list and concession map for Masindi-Hoima was disseminated on request to the Office of the Prime Minister (OPM).
- Geoscience information/data was disseminated to eighty (80) users, visitors and staff with various technical needs concerning mining opportunities, mineral statistics, mineral exploration, and mining activities.

5.0 THE SUPPORT SERVICES



The major functions of the Support Services are:

- i. Financial management and accounting
- ii. Administration, personnel services and human resources development
- iii. Supplies and facilities management
- iv. Planning and Budgeting
- v. Resource Centre
- vi. Policy formulation and implementation
- vii. Policy Analysis

The key outputs recorded during the period under review included: -

- i. Administration duties and personnel service
- ii. Human resources management and development
- iii. Financial management and accounting
- iv. Procurement/disposal and facilities management
- v. Resource centre/library management
- vi. Planning, monitoring and budgeting

The Support services of this ministry were:-

- i. Restructuring plans for the ministry were executed;
- ii. The payroll was cleaned and updated;
- iii. Pre-qualified firms to supply goods and services, enhanced transparency and timely procurements;
- iv. Implemented the IFMS operations;
- v. Provided VCT services to staff;
- vi. Ministry's Budget prepared and submitted on schedule;
- vii. Ministerial Policy Statement prepared and submitted on schedule;
- viii. Implementation Plans and reports compiled and submitted on schedule;
- ix. Annual Reports prepared and published.
- x. Progressive Reports for the Implementation of H.E. the President's Election Manifesto compiled.

Fig. 56: Management of the Support services

5.1 Finance Management and Accounting

Budget Performance for FY 2016/2017

The Ministry's approved budget for the FY2016/17 was UGX 2,110.714 billion of which UGX 4.063 billion was wage, UGX 3.326 billion was Non Wage Recurrent, UGX 392.475 billion for GoU domestic development, UGX 1,710.755 billion as external financing and UGX 0.095 billion for Arrears. The half year budget outturn as at December 2016 for Wage and Non-wage recurrent was 50% and 41% respectively.

Table 42: Summary of the approved Wage and Non-Wage Recurrent Budget FY 2016/17

Prog	Directorate/Department/Unit	Non-wage (Bn)	Wage (Bn)
03	Energy Resources	0.2	0.5
04	Petroleum Exploration Production	0.2	0.2
05	Geological Survey and Mines	0.2	1.2
08	Internal Audit	0.4	0.0
09	Renewable Energy	0.2	0.0
10	Energy Efficiency and Conservation	0.2	0.0
11	Electric Power	0.1	0.0
12	Petroleum Exploration and Production	0.4	0.7
13	Midstream Petroleum	0.2	0.0
14	Petroleum Supply and Distribution	0.7	0.7
15	Geological Survey Mines	0.2	0.0
16	Geothermal Resources	0.1	0.0
17	Mines	0.1	0.0
18	Finance and Administration	1.7	0.7
19	Sectoral Planning and Policy Analysis	0.3	0.0
	Total	5.1	4.0

Table 43: Summary of Wage and Non-Wage Recurrent Budget Performance by Dec. 2015 (Bn)

Item	Approved Budget	Released by end of December 2015	Spent by end of December 2015	(%) Budget Released	(%) of Budget spent	(%) releases spent
Wage	4.0	2.4	2.2	57.9	54.5	94.1
Non-wage	5.1	1.7	1.4	32.0	26.0	81.3

Table 44: GoU Development Budget Performance in the FY 2015/16 by December 2015 (billions)

Proj	Account	Approved Budget	Releases	Spent by Dec 2015	% Release spent
325	Energy for Rural Transformation II	2.41	0.80	0.80	100
940	Support to Thermal Generation	72.29	18.07	18.07	100
1023	Promotion of Renewable Energy & Energy Efficiency	4.96	1.43	1.16	80.8
1024	Bujagali Interconnection Project	0.50	0.50	0.50	100
1026	Mputa Interconnection Project	1.50	0.11	0.11	100
1137	Mbarara-Nkenda/Tororo-Lira Transmission Lines	1.45	0.33	0.33	100
1140	NELSAP	2.34	0.29	0.29	100
1143	Isimba HPP	20.08	17.78	17.70	99.5

1144	Hoima - Kafu interconnection	1.00	0.23	0.23	100
1183	Karuma Hydroelectricity Power Project	86.42	133.17	131.05	98.4
1184	Construction of Oil Refinery	32.00	5.05	4.86	96.2
1199	Uganda Geothermal Resources Development	4.30	1.79	1.68	93.8
1212	Electricity Sector Development Project	3.85	1.12	1.11	99.3
1221	Opuyo-Moroto Interconnection Project	1.00	0.28	0.28	100
1222	Electrification of Industrial Parks Project	1.04	0.22	0.22	100
1223	Institutional Support to Ministry of Energy and Mineral Development	19.88	8.66	8.28	95.6
1256	Ayago Interconnection Project	0.10	0.05	0.00	2.7
1258	Downstream Petroleum Infrastructure	12.50	3.10	2.90	93.5
1259	Kampala-Entebbe Expansion Project	10.52	2.58	2.58	100
1350	Muzizi Hydro Power Project	1.07	0.18	0.18	100
1351	Nyagak III Hydro Power Project	0.91	0.20	0.20	100
1352	Midstream Petroleum Infrastructure Development Project	2.98	1.16	1.49	128.1
1353	Mineral Wealth and Mining Infrastructure Development	6.60	1.17	0.89	75.6
1355	Strengthening the Development and Production Phases of Oil	18.19	4.03	3.71	92.0

Table 45: GoU Development Budget comparison between 2015/16 and 2016/17 (UGX billions)

Project Name and Code	Approved 2015/16	Estimates 2016/17
0325: ERTII – MEMD	2.41	2.41
0940: Support to Thermal	72.29	72.29
1023: Prom. Of Renewable Energy	4.96	20.37
1024: Bujagali Interconnection Project	0.50	2.13
1025: Karuma Interconnection Project		0.40
1026: Mputa Interconnection	1.50	91.45
1137: Mbarara-Nkenda/Tororo-lira	1.45	11.26
1140: NELSAP	2.34	36.56
1143: Isimba HPP	20.08	501.68
1144: Hoima Kafu	1.00	16.84
1183: Karuma HPP	86.42	896.89
1184: Oil Refinery Construction	32.00	140.29
1199: Geothermal Resources Development	4.30	4.30
1212: ESDP	3.85	42.70
1221: Opuyo-Moroto	1.00	3.00
1222: Industrial Parks	1.04	91.34
1223: Institutional Support to MEMD	19.88	19.38
1256: Ayago Interconnection Project	0.10	2.73
1258: Downstream Petroleum Infrastructure	12.50	12.50
1259: Kampala-Entebbe Expansion Project	10.52	55.95
1350: Muzizi Hydro Power Project	1.07	19.55
1351: Nyagak III Hydro Power Project	0.91	7.91
1352: Midstream Petroleum Infrastructure	2.98	10.07
1353: Mineral Wealth and Mining	6.60	7.60
1355: Strengthening Development of Oil	18.19	21.44
1387: 2*220KV Kawanda Line Bays at Bujagali		0.20
1388: Mbale-Bulambuli (Atari) 132KV transmission line		0.22
1389: New Nkenda 132/33KV, 2*60MVA Substation		0.25
1390: Network Manager System (SCADA/EMS) upgrade		0.15

1391: Lira-Gulu-Agago 132KV transmission project		7.20
1392: Design, Construction and Installation of Uganda National I		2.00
1407: Nuclear Power Infrastructure Development Project		2.00
1409: Mirama-Kabale 132kv Transmission Project		8.00
1410: Skills for Oil and Gas Africa (SOGA)		0.70

Financial Reporting

IFMS continued to enhance timely and effective financial reporting. Following the reforms in the Accountant General's office, the Electronic Funds Transfer (EFT) mode of payment has further enhanced effectiveness and timely payments to stake holders. Timely reporting on financial matters still remains a strong point of IFMS.

5.2 Human Resource Management and Development

5.2.1 Establishment

During the year under review, Ministry of Energy and Mineral Development continued to implement its new structure with the aim to fill in the structure. Additional 50 posts have been cleared by Ministry of Public for filling. 21 positions filled, 38 submissions recommending eligible officers to fill the vacant posts submitted to Public Service Commission.

5.2.2 Recruitment of Staff and Promotions

The Ministry continued to fill in the vacant positions by receiving a number of newly recruited staff and deploying them to respective Directorates. In addition, Officers from different Ministries were also transferred /deployed to this Ministry and some of the officers within the Ministry were promoted to higher positions thus filling some of the vacant positions in the Ministry's structure as illustrated below.

Staff Transfers / External Deployment

The Public Service by normal posting instructions, posted a number of newly recruited Officers to the Ministry. Other Officers joined the Ministry on transfer while others left the Ministry on transfer, mandatory retirement and natural waste.

i) Five (5) officers were newly appointed into the Ministry for the period under review

No	Name	Position	Status
1	Musherure James	Petroleum Economist	New appointment
2	Ocilaje Thomas	Energy Officer	New appointment
3	Abbo Damalie Noel Ofumbi	Energy Officer	New appointment
4	Twesigye Alex	Energy Officer	New appointment
5	Tusiime Denis Tungotyo	Energy Officer	New appointment

ii) Eleven (11) Officers joined the Ministry on transfer as indicated below:-

No	Name	Title	Former Ministry
1	Prisca Boonabantu	Under Secretary	Office of the President
2	Hope Byaruhanga	Assistant Commissioner, Human Resource Management	Ministry of Justice and Constitutional Affairs
3	Latigi Okello Betty	Principal Personal Secretary	Courts of Judicature

4	Mariam Nagadya	Senior Human Resource Officer	Ministry of Water and Environment
5	Omweru Alex	Human Resource Officer	Ministry of Public Service
6	Nalule Faridah	Personal Secretary	Ministry of Works and Transport
7	Nampewu Ritah	Personal Secretary	Ministry of Water and Environment
8	Mugula Clare	Personal Secretary	Mulago National Referral Hospital
9	Tibenda Grace	Assistant Records Officer	Ministry of Public Service
10	Florence Kamugisha	Office Supervisor	Ministry of East African Community Affairs
11	Mugubya Christopher	Driver	Office of the President

iii) Four (4) Officers left the Ministry on transfer are as follows;-

No	Name	Title	New Ministry
1	Ssegawa Ronald Gyagenda	Under Secretary	Ministry of Health
2	Wanirwoth Agnes	Personal Secretary	Ministry of Agriculture, Animal Industry and Fisheries
3	Nandutu Seera	Personal Secretary	Ministry of Ethics and Integrity
4	Namulera Margret	Office Typist	Courts of Judicature

iv). Confirmation in Appointment

During the year of review, thirteen (13) Officers completed their six months probationary period successfully and they were confirmed in their appointment. They are:-

No	Name	Title
1	Kedi Vicent	Geologist
2	Eneku Gerald	Mines Warden
3	Olwa James	Geologist
4	Ssebagala David	Inspector of Mines
5	Tinkasiimire Peter	Petroleum Officer
6	Nyakahuma Joel	Petroleum Officer
7	Twesigye Alex	Energy Officer (Nuclear Safety) (Probationary period waived)
8	Tusiime Denis Tungotyo	Energy Officer (Nuclear Power) (Probationary period waived)
9	Abbo Damalie Noel Ofumbi	Energy Officer (Nuclear Fuel) (Probationary period waived)
10	Ocilaje Thomas	Energy Officer (Radioactive Waste) (Probationary period waived)
11	Kakayi Jane Lillian	Personal Secretary
12	Natabo Miriam	Energy Officer (Biomass)
13	Bateebe Irene Pauline	Petroleum Officer (Refinery)

5.2.3 Career Progression/Promotions/Exit

i) Progression

During the year under review, Sixteen (16) members of staff were promoted to higher posts; due to attainment of higher qualifications for some, while others met the requirements of the promotional offers as indicated below.

No	Name	Old title	New title	Directorate/Dept.
1	Ernest N.T. Rubondo	Commissioner, Petroleum Exploration and Production	Director, Petroleum	Petroleum
2	Edwards Katto	Commissioner, geological Survey and Mines	Director, Geological Survey and Mines	Geological Survey and Mines
3	Robert Kasande	Assistant Commissioner (Geology)	Commissioner, Midstream Petroleum	Petroleum
4	Eng. Bidasala – Igaga Henry Daniel Mugoya	Assistant Commissioner (Electric Power)	Commissioner, Electric Power	Energy Resources Development
5	Ndawula Godfrey	Assistant Commissioner (New And Renewable Sources of Energy)	Commissioner, Renewable Energy	Energy Resources Development
6	Baanabe James Isingoma	Assistant Commissioner (Energy Efficiency)	Commissioner, Energy Efficiency and Conservation	Energy Resources Development
7	Betty Nannyondo	Principal Internal Auditor	Assistant Commissioner, Internal Audit	Finance and Administration
8	Hope Byaruhanga	Principal Human Resource Management	Assistant Commissioner, Human Resource Management	Finance and Administration
9	Agnes Alaba	Principal Staff Cartographer	Assistant Commissioner, Geo Data	Geological Survey and Mines
10	Baguma Zachary Mosimoson Atwooki	Principal Geologist	Assistant Commissioner, Geology	Geological Survey and Mines
11	Kato Vincent	Principal Geologist (Exploration)	Assistant Commissioner, Geology and Geo-Chemistry	Geological Survey and Mines
12	Tugume Fred Alex (Dr.)	Principal Geophysicist	Assistant Commissioner, Geophysics	Geological Survey and Mines
13	Menya Cecilia Nakiranda	Principal Energy Officer (Electric Power)	Assistant Commissioner, Electrical Generation	Energy Resources Development
14	Rwakasanga Gershom Kateera	Principal Petroleum Officer (National	Assistant Commissioner, Transport and Storage	Directorate of Petroleum

		Petroleum Reserves)		
15	Banaga – Baingi Gerald	Principal Petroleum Officer	Assistant Commissioner, (Technical Planning)	Sectoral Planning and Policy Analysis
16	Aheebwa Peninah	Senior Development Analyst	Principal Petroleum Officer (Planning)	Sectoral Planning and Policy Analysis

iii) Exit from the Ministry

During the period under review, six (6) members of staff exited the Ministry through attaining the Public Service mandatory retirement age, resigned from the Public Service/absconded from duty and through death.

No	Name	Title	Course of exit
1	Karusya Kenneth	Geophysical Technician	Mandatory retirement
2	Obbo Raphael	Office Attendant	Mandatory retirement
3	Alanyo Joyce	Office Typist	Mandatory retirement
4	John Kimbugwe	Driver	Mandatory retirement
5	Kijoma Patrick	Driver	Absconded from duty
6	Bayiringisa John	Health, Safety and Environment Officer	Death

iv) Obituary

On 15th August, 2015, the Ministry lost one of the staff members in the names of Mr. Bayiringisa John – Health, Safety and Environment Officer who was attached to the Directorate of Petroleum and burial took place in Nateete, opposite Nateete Muslim Primary School, Wakiso District.

5.2.4 Cross cutting issues

i. HIV/AIDS Work Place Policy

The Ministry continued to implement its HIV/AIDS Workplace Policy through a number of activities both within and outside the Ministry with the aim of reducing the spread of HIV/AIDS in the country in line with the National HIV/AIDS Strategic Plan 2015/16. The Ministry has an operational HIV/AIDS team which consists of the Permanent Secretary as the head assisted by the Ministry HIV/AIDS Focal Point Officer together with the Directorate/Departmental Focal Point Officers, Peer Educators, Taskforce and Implementation Committees. There were a number of activities which were implemented, these include among others the following:-

- The Ministry continued to improve the working condition for the workers, by conducting free counselling services for the staff in areas of reducing job related stress and burnout, reversing or reducing alcohol/drug related problems, HIV/AIDS prevention and support to access care and treatment. A total of 127 members of staff were counselled. The counselling service is scheduled every Thursday and Friday of the week in Entebbe. The Ministry is in the process of extending these services to the Ministry Headquarters.
- The Ministry also conducted a three (3) day HIV Counselling and Testing exercise from 2nd to 4th December, 2015 in commemoration of World AIDS Day. A total of 117 staff were counseled and tested.



Figure 57: Members of staff undergoing HIV/AIDS Testing

- One (1) day Workplace Wellness Day (Know your body Campaign) was organised for staff on 3rd December, 2015. This was done with support from GIZ where health screening of Blood pressure, Blood sugar, Body Mass Index, Metabolic Rate, Body Age, Internal Body Fat, Waist to Hip ratio and Hepatitis B (screening only) were conducted. A total of 154 members were screened under the theme “Know your body Campaign” and “Getting to zero; My Responsibility”.



Figure 58: A Technical Team from Wellcare waiting for Members of staff for screening

- The Ministry organized a three (3) day field trip for the HIV/AIDS Line Ministries Self Coordinating Entity team to the Oil and Gas areas in Albertine Graben (Hoima, Buliisa and Nwoya District) from 26th to 28th August, 2015.



Figure 59: The Line Ministries Self Coordinating Entity (LMSCE) Team sharing HIV/AIDS experience with Hoima District Local Government Officials at Hoima LG Headquarters



Figure 60 (above): MEMD Communications Officer explaining to the LMSCE Team the first discovery of Oil from the Top of Butyaba Escapement during the tour to Buliisa District



Figure 61: (Left) LMSCE Team sharing HIV/AIDS experience with the Medical Officer and staff at Buliisa General Hospital during the tour. (Right) LMSCE posed for a group photo together with the Hospital Staff and the Tullow Uganda Representative

- Ten (10) new condom Dispensers were received from Uganda Cares with support from Uganda AIDS Commission and were mounted in different washrooms in Amber house and Entebbe.



Figure 62: Condom Dispensers carrying male condoms mounted in the different washrooms in Ministry of Energy and Mineral Development, Amber House premises

- One (1) day sensitization workshop on HIV/AIDS for staff conducted on 15th May, 2015 at Amber House. The aim was to sensitize the staff on the current trends of HIV/AIDS in Uganda – combination prevention, basic Counselling and guidance, partnership and the role of Line Ministry Self Coordinating Entity (Energy and Mineral Development).



Figure 63: HIV/AIDS Peer Educators and Implementation Teams attending the HIV/AIDS workshop on 15th May, 2015 on fourth floor, Amber House

- Four (4) HIV/AIDS Committee meetings were held with the support from Uganda AIDS Commission through Delloitte during the year of review.
- HIV/AIDS work plan 2015/16 was developed.
- Fifteen (15) cartons of Condoms were distributed with support from GIZ, TASO Mulago and Uganda CARES.
- Four (4) Monitoring and Support Supervision for Sectoral HIV/AIDS Projects and Programmes being implemented by Sinohydro Company Limited in Karuma and CWE in Isimba Hydropower project were conducted.



Figure 64: HIV/AIDS awareness material placed at different sites in Isimba Hydropower Project Areas in Kayunga



Figure 65: The Isimba Hydropower project site workers receiving safety boots during the Health and Safety inspection.

- One massive HIV counselling, testing and sensitization exercise was conducted in Karuma Trading Centre near the Karuma Hydropower Project surrounding areas in September 2015. Thousands of members of the Community were tested and sensitized.



Figure 66: MEMD Staff sensitizing members of the Community on the HIV/AIDS preventive measure (the effective and proper use of condoms during the sensitization in Karuma Trading Centre.



Figure 67: Displayed banners for public campaign awareness during the massive HIV Counselling and Testing exercise and sensitization conducted in Karuma Trading Centre near the Karuma Hydropower Project Site

- The Ministry also participated in the workshop organised for the HIV/AIDS Focal Point Persons in Esella Hotel, Kireka on 13th May, 2015.
- The Ministry also participated in the Annual Retreat of Line Ministry Self Coordinating Entity (LMSCE) held from 26th – 27th June, 2015.
- The Ministry received 500 copies of Information, Education and Communication materials from Uganda AIDS Commission.
- Quarterly Financial support to members of staff who are living positively was provided.

ii. Gender Mainstreaming in the Ministry

Gender Mainstreaming in the Ministry was implemented in accordance with National Gender Policy, also with guidance from Ministry of Gender, Labour and Social Development and support from GIZ. Ministry of Energy and Mineral Development with support from GIZ organized a Gender Day in commemoration of International Women’s Day held on 8th March, 2015 at Amber House Quadrangle. It was attended by Ministry members of staff, representative from Ministry of Gender, Labour and Social Development, GIZ Promotion for Renewable Energy and Energy Efficiency Programme (PREEEP) staff and well-wishers.



Figure 68: Guest Speaker from Ministry of Gender, Labour and Social Development presenting a paper during the celebration on 8th March, 2015

5.2.5 Human Resource

Capacity Building

A number of members of staff (as captured in appendix 3) continued to benefit from long and short-term training, participation in conferences both locally and abroad as well as in-house training. During the period under review, members of staff benefited from training ranging from postgraduate training, short-term training, study tours and investment conferences.

Contract staff

Indicated below is the list of Contract Staff in the Ministry as at December 2015 under different Directorates, projects and programmes:

i. Finance and Administration

NO	NAME	TITLE
1	Valeria Nakaweesa Ntege	Estate Engineer
2	Bukenya Matovu	Communication Specialist
3	Sam Gizamba Gibuzui	Personal Assistant (Hon. MEMD)
4	Kyazze Paul Hans	Communication Specialist (Electronic Media)
5	Masaba Yusuf	Communication Specialist (Broadcast)
6	Kasita Ibrahim	Communications Specialist (Print Media)
7	Warren Mubangizi	Systems Administrator
8	Kaddu Kizza Dissan	Information Technology Officer
9	Nabukenya Winnie	Administrative Assistant
10	Kayaga Janet	Assistant Receptionist
11	Bashaija Nicholas	Assistant Estate Engineer
12	Doryne Nabukonde	Personal Secretary
13	Nadunga Christine	Secretary
14	Ham Masiko Mubinga	Accountant
15	Ssebowo Simon	Economist
16	Kihunde Allen	Economist
17	Lisa Katrina Atukunda	Planner (Petroleum)
18	Adroner Mary	Assistant Procurement Officer
19	Najjuka Carol	Assistant Procurement Officer
20	Tomson Tomuim Karangira	Accounts Assistant
21	Opuwa Frank Zion	Library Assistant
22	Henry Ovona	Human Resource Officer
23	Monica Anichan	Secretary
24	Opol Smith	Assistant Procurement Officer
25	Joanita Nalwanga	Assistant Procurement Officer
26	Fred Mpira	Mail Runner
27	Kakooza Jimmy Rogers	Driver
28	Bigabwa M. John	Driver
29	Jalromo .C.Rodians	Driver
30	Banda Scanlen	Driver
31	Mwambu Simon	Driver
32	Doreen Mugisha	Office Attendant

33	Philip Agunda	Office Attendant
34	Muyama Sophie	Office Attendant
35	Jacklean B. Berocan	Office Attendant
36	Fred Kiwanuka	Office Attendant
37	Deogratious Sekkungu	Driver

ii. Directorate of Energy Resources Development

a) Energy for Rural Transformation (ERT Phase II)

No	Name	Title
1	Emmanuel Buringuriza	Coordination Manager
2	Eng. Murengezi Moses	Advisor to PS on Energy and Mineral Sector Working Group
3	Oketayot Samuel	Project Accountant
4	Sherifah Atugonza	Accounts Assistant
5	Naagula Asiya	Assistant Procurement Officer
6	Nabagereka Bridget	Electrical Engineer
7	Ivan Senfuma	Communication Officer
8	Keefa Odongo Okurut	Monitoring Officer
9	Wabaye Abbey	Office Attendant
10	Racheal Basirika	Office Attendant
11	Musana Charles	Driver
12	Stephen Waiswa	Driver

b) Promotion of Renewable Energy and Energy Efficiency (PREEEP)

No	Name	Title
1	Birimumaso David	Energy Officer
2	Musiime Emmer Rava	Energy Officer
3	Augustine M. Tsongo	Energy Officer
4	Keisy Irene Atim	Energy Officer
5	Mayanja Hatimu	Energy Officer
6	Ochieng Julius	Energy Officer
7	Justine Akumu	Energy Officer
8	Alinaitwe Prossy	GIS Officer
9	Martin Kretschmer	Head, GIS Unit
10	Alex Nuwagira	Procurement Officer
11	Sabiiti Tom	Assistant Procurement Officer
12	Pamella Nsubuga	Administrator
13	Suzan Nalwoga	Communication Officer
14	Robert Karunga	Driver
15	Lubowa Alex Kintu	Driver
16	Karungi Robert	Driver
17	Godfrey Mwebe	Driver
18	Pauline Nabayaza	Office Attendant
19	Rebecca Kaguna	Office Attendant
20	Barbara Kyobutungu	Office Attendant

21	Vicky Lubandi	Office Attendant
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c) Nuclear Energy Unit

NO	NAME	TITLE
1	Wamala Emmanuel	Nuclear Engineer
2	Baguma Sabbiti	Nuclear Safety Engineer
3	Nabugosiri Caroline	Office Attendant
4	Nalima Emmanuel	Driver

d) Electricity Sector Development Project

NO	NAME	TITLE
1	Okama Zion	Socio – Economist
2	Achao B. Marion	Socio – Economist
3	Nakiyingi Diana	Administrator
4	Nakato Hellen	Statistician
5	Atuhairwe Ronald	Electrical Engineer
6	Gubala Fredrick	Electrical Engineer
7	Mukeera Ibrahim	Electrical Engineer
8	Kayiwa Collins	Training (Electrical Engineer)
9	Mwesigwa Peter	Training (Construction Engineer)
10	Martin Mutabingwa	Electrical Engineer
11	Nakabiri Grace	Assistant Health Counselor
12	Kemigisha Paskazia	Social Worker
13	Namungu Patience Brendah	Social Worker
14	Bewayo Richard	Driver

e) Karuma and Isimba Hydro power Project

NO	NAME	TITLE
1	Amuge Susan	Sociologist
2	James Yiga	Mechanical Engineer
3	Sedirimba Ian	Electrical Engineer
4	Semujuu Evarest	Electrical Engineer
5	Nabatanzi Anita	Electrical Engineer
6	Muwumuza Linda	Mechanical Engineer
7	Mwase Godfrey Jesser	Sociologist
8	Maganda Shaban	Sociologist
9	Wakesa Fredrick	Sociologist
10	Kagoya Racheal	Sociologist
11	Mwesigwa Bruce	Environmentalist
12	Karungi Ann Lylean	Environmentalist
13	Uwere Ronald	Environmentalist
14	Amanyire Josset	Administrator
15	Negohe Peter	Driver
16	Mwima Yoweri	Office Attendant
17	Balisanyuka John	Driver
18	Sengooba Mudasir	Driver
19	Nyengo Robert	Driver

20	Mugaya Rogers Sosi	Driver
21	Dhikusooka Abu	Driver

iii) Directorate of Geological Survey and Mines

NO	NAME	TITLE
1	Martin Nganda	IT Officer
2	Geraldine Paula Babirye	Geophysicist
3	Achieng Jacinta	Chemist
4	Wepukhulu David	Archivist
5	Nabatanzi Mariam	Receptionist
6	Felice Nyanjura	Accounts Assistant
7	Robert Macheri	Geophysical Technician
8	Dennis Mbehewereize	Security Guard (Hoima Station)
9	Paul Ndawula	Driver
10	Justus Mwesigwa	Driver
11	Nsereko Robert	Driver
12	James Makumbi	Driver
13	Prossy Namulindwa	Office Attendant
14	Berna Nassiwa	Records Assistant
15	Kellen Kiaya	Office Attendant
16	John Kikutte	Office Attendant
17	Bernadette Kenyange	Office Attendant
18	Dorecah Kabarungi	Office Attendant

Geothermal Project

NO	NAME	TITLE
1	Kisembo Peter	Geophysical Technician
2	Mukaikulu Emilly	Office Attendant
3	Luwaga Angel	Driver
4	Wizeye David	Driver
5	Silver Ntegyereize	Driver
6	Ruth Mugenyi	Office Attendant
7	Atukwase Doreen	Office Attendant
8	Ayorikire Bruce	Office Attendant
9	Nasaazi Martha	Office Attendant
10	Tawainia Robert	Security Guard
11	Damiano Ssemyalo	Cleaner
12	Mukwaya Achileo	Cleaner
13	Najjingo Noeline	Cleaner
14	Namasonga Sarah	Cleaner
15	Nankumba Regina	Cleaner
16	Ntumwa David	Cleaner
17	Kisembo Peter	Geophysical Technician

MWAMID Project

NO	NAME	TITLE
1	Kakatera Samuel	Driver
2	Lukyamuzi Geoffrey	Driver
3	Magoola Nathan	Driver
4	Waggwa William	Driver
5	Bukenya Patrick	Driver
6	Aimana Geoffrey	Security Guard
7	Akello Florence	Office Attendant
8	Atukunda Moses	Security Guard
9	Balyejusa Jones	Office Attendant
10	Kabangenyi Annet	Office Attendant
11	Kakooza Rovinsa	Office Attendant
12	Muhumuza Keleb	Security Guard
13	Mukimba Annet	Office Attendant
14	Akankunda Sharon	Office Attendant
15	Nantume Damalie	Office Attendant
16	Saphirah Natuhwera	Office Attendant

IV. Directorate of Petroleum

Strengthening the Management of the Oil and Gas Sector in Uganda – Phase II

NO	NAME	TITLE
1	Susan Kateme	Programme Administrator
2	Emmanuel Odea	Accountant
3	Bekunda Catherine	Communications Officer
4	Michael Aparoku	Procurement Officer

Office of the Director

1	Namubiru Betty Jackie	National Content & Capacity Building officer
2	Goboola Ronald	National Content & Capacity Building officer
3	Christine Kabagenyi (Oundo)	National Content Development and Capacity Building Officer
4	Tusingwire Edgar Bagarukayo	National Content Development and Capacity Building Officer

Support Staff

1	Paul Rubondo	Senior Accountant
2	Katusabe Fred	Accountant
3	Fatuma Mirembe	Personal Secretary
4	Beatrice Etima	Office Attendant

Upstream Department

1	Angellah Kyomugisha Kiiza	Cost Engineer
2	Ayebare Tom Rukundo	Cost Engineer
3	Muwooye Daniel	Cost Engineer
4	Aliganyira John Bosco	Petroleum Engineer
5	Felix Okot	Petroleum Engineer
6	Twebaze Caroline	Geophysicist
7	Raymond Mugume	System Administrator
8	Francis Elungat	Lands Officer
9	Denis Karamagi	Lands Officer
10	Jacob Were Magala	Procurement Officer
11	Kabuye Isaac	Legal Officer
12	Wamani Brayan	Lands Officer
13	Daniel Muzoora	Legal Officer
14	Asakut Faith Sheffer	Economist
15	Joyce Mbabazi	Records Assistant
16	Akwila Moses	Fleet Officer
17	Apollo Omongo	Assistant Procurement Officer
18	Elvis Bongomin	Office Attendant
19	John Kayinda	Office Attendant
20	Rebecca Nanyojo	Office Attendant
21	Mutebi Eric Brian	Office Attendant
22	Juliet Bonabana	Office Attendant
23	Christine Nakasi	Office Attendant
24	Agnes Lillian Aedeke	Office Attendant
25	Everlyn Agesa	Office Attendant
26	Rose Namatovu	Office Attendant
27	Stella Anguezaru	Office Attendant
28	Namugenyi Betty	Office Attendant
29	Ssenyondo Polycap	Office Attendant
30	Doreen Atukwatse	Watchwoman
31	William Maate	Watchman
32	Madilu Jamali	Watchman
33	Negohe Wilson	Watchman
34	Higenyi Kulaira	Security Guard
35	Florence Ayikoru	Washroom Cleaner
36	Solomon Eriaka	Washroom Cleaner
37	Nyona Christine	Washroom Cleaner

38	Eunice Maturu	Washroom Cleaner
39	Stellah Ariyo	Compound Cleaner
40	Koline Adongo	Compound Cleaner
41	Ekisoferi Mubajje	Compound Cleaner
42	Benard Ogua	Compound Cleaner
43	Nabasitu Sarah	Compound Cleaner
44	Mwesigwa Patrick	Compound Cleaner
45	Busingye Charles	Driver
46	Omoding Paul	Driver
47	Okiring Emmanuel	Driver
48	Simon Amani Peter	Driver
49	Abidrabo Kennedy	Driver
50	Oyire George	Driver
51	Anthony Asaya	Driver
52	Steven Nkulabwire	Driver
53	Tumwebaze Joel	Health, Safety and Environment Officer
54	Daniel Amanyana	Policy Analyst

Refinery Development Project (RDP)

1	Asiimwe Dickens Katta	Legal Officer
2	Emilly Nakamya	Economist
3	Phiona Naturinda	Mechanical Engineer
4	Nagawa Lillian	Process Engineer
5	Jalum Robert	Process Engineer
6	Ariho Benjamin	Mechanical Engineer
7	Joyce Lanyero Atube	Personal Secretary
8	Tushabe Morris	Driver

Petroleum Supply and Distribution Department (Downstream)

NO	NAME	TITLE
1	Sembatya Ahmed	Driver
2	Kasadha Peter	Driver
3	Ayebazibwe Peruth	Office Attendant

5.3 Supplies, Facilities Management and Welfare

The Ministry Procurement and Disposal Unit and the Contracts Committee handled the supplies and procurement activities in the Ministry in liaison with the User Departments. Various procurements were handled on the Integrated Financial Management System to ensure timely delivery of goods and services. The Procurement and Disposal Unit prepared and submitted to the Public Procurement and Disposal of Public Assets Authority (PPDA) monthly reports on Macro and Micro procurements. The procurements that were handled over the reporting period are summarised as below:

- Macro procurements - 154
- Framework contracts - 141
- Micro procurements - 395

5.4 Resource Centre

The Resource Center is mandated to collect, process, store, document and disseminates strategic information on various activities carried out by the Ministry.

During the period under review, the Resource Centre continued to ensure proper collection management by adhering to processing procedures; proper shelving and availing information required by both Ministry staff and the general public. A total of sixty eight (68) titles were added to the print collection, of which three (03) were Ministry of Energy and Mineral Development (MEMD) publications. These titles were catalogued, labeled and are accessible from our open shelves for users' various information needs.

The Resource Center continued receiving daily newspapers and regular issues of The Independent journal in addition to e-books and e-journals accessed under Research 4Life programme of the World Intellectual Property Organization (WIPO). These have continued to attract frequent staff members' visits to the Resource Centre.

In addition to responding to numerous enquiries for information on varying topics on the Energy and Mineral sector, the staff have continued to: provide computer support services to members of staff, maintain and upgrade Ministry ICT systems, including the home page at: <http://energyandminerals.go.ug/>

5.5 Sector Planning/Policy Analysis

5.5.1 Budgeting and Budget Estimates

i) Budget Framework Paper 2016/17

The Ministry, in response to the 1st Budget Call Circular dated 9th September 2015, through the Sector Planning and Policy Analysis Department (SPPAD) commenced on the process of preparing the Budget Framework Paper (BFP) for the Fiscal Year 2016/17. This was due for submission to MoFPED by 15th November 2015. The Medium Term Expenditure Framework (MTEF) ceiling for the Ministry included financial resources for the approved projects.

ii) Background to the Budget and the Budget Speech 2015/16

In May 2015, the Ministry's contribution to the Background to the Budget chapter and the Budget speech for the FY2015/16 were compiled and submitted to the Ministry of Finance, Planning and Economic Development in the required time. The contributions reflected summaries of the Ministry's major achievements for the FY 2014/15 and the forecast for FY 2015/16. These were captured in the documents published by the Ministry of Finance, Planning and Economic Development.

iii) Ministerial Policy Statement (MPS) 2015/16

The Ministerial Policy Statement (MPS) for FY 2015/16 was prepared and submitted to Parliament as required and the Budget was subsequently approved by Parliament. The MPS also reflected achievements of the Ministry in the FY 2014/15 and the forecast for the FY2015/16.

iv) Public Investment Plan (PIP)

Profiles of the new and old Government Development Projects and Programmes under the Ministry were updated. These are:

- 0325: ERTII – MEMD
- 0940: Support to Thermal
- 1023: Prom. Of Renewable Energy
- 1024: Bujagali Interconnection Project
- 1026: Mputa Interconnection
- 1137: Mbarara-Nkenda/Tororo-lira
- 1140: NELSAP
- 1143: Isimba HPP
- 1144: Hoima Kafu
- 1183: Karuma HPP
- 1184: Oil Refinery Construction
- 1199: Geothermal Resources Development
- 1212: ESDP
- 1221: Opuyo-Moroto
- 1222: Industrial Parks
- 1223: Institutional Support to MEMD
- 1256: Ayago Interconnection Project
- 1258: Downstream Petroleum Infrastructure
- 1259: Kampala-Entebbe Expansion Project
- 1350: Muzizi Hydro Power Project
- 1351: Nyagak III Hydro Power Project
- 1352: Midstream Petroleum Infrastructure
- 1353: Mineral Wealth and Mining
- 1355: Strengthening Development of Oil

v) Implementation Plans

During the period under review, the Ministry continued to compile Quarterly Implementation Plans (QIPs) of the different development projects under the Ministry and subsequently the 2015/16 Annual Implementation Plans (AIPs) for all the Projects/Programmes were produced and submitted to the Office of the Prime Minister (OPM) in the required time.

vi) Performance Contract FY 2015/16

The Annual Performance Contracts and the Quarterly Implementation Plans for the FY2015/16 were prepared and submitted to MoFPED. In addition, the Annual Performance Targets for FY2015/16 for the Ministry were produced and submitted to the Office of the Prime Minister (OPM) according to the format provided.

5.5.2 Monitoring and Reporting

i) Annual Report (AR) 2014

During the year 2015, the Ministry's Annual Report of 2014 was finalized and published. The Report is available in digital form on the Ministry's website (<http://www.energyandminerals.go.ug>). This was the Ministry's 15th consolidated report that gives details of the Ministry's achievements for the Calendar Year 2014.

ii) Quarterly Progress Reports (QPR)

During the period under review, the Ministry submitted the Quarterly Progress Reports (QPRs) by the 15th day after the quarter to the Office of the Prime Minister and to the Ministry of Finance Planning and Economic Development.

iii) Energy and Mineral Development Sector Strategic Plan for Statistics (EMDSSPS)

The Ministry continued to participate in the implementation of the Plan for National Statistical Development (PNSD), spearheaded by the Uganda Bureau of Statistics (UBOS). The Plan is intended to strengthen the statistics activities in the Ministry. The Vision of the Plan is 'the proposed Statistics Unit to become a one stop centre for the country's statistics in the Sector'. During the period under review, the implementation of the Ministry Sector Strategic Plan for Statistics continued to be implemented.

iv) The Energy and Mineral Development Sector Working Group (EMD-SWG)

The Sector Planning and Policy Analysis Department coordinates the secretariat for the EMD-SWG. The Sector Working Group (SWG) continued to spearhead the development of a Sector Strategic Investment Plan (SSIP) to consolidate the various plans in the Energy and Mineral Development (EMD) Sector. The Secretariat successfully organised the **5th Energy and Mineral Development Joint Sector Review Conference** that took place from **15th – 16th October 2015** at Speke Resort Munyonyo, Kampala. A key output of the Conference was the agreement upon undertakings for the Financial Year 2016/2017.

6.0 CHALLENGES AND CONCLUDING REMARKS

6.1 Challenges

Challenges and constraints during the year 2015 are outlined below:

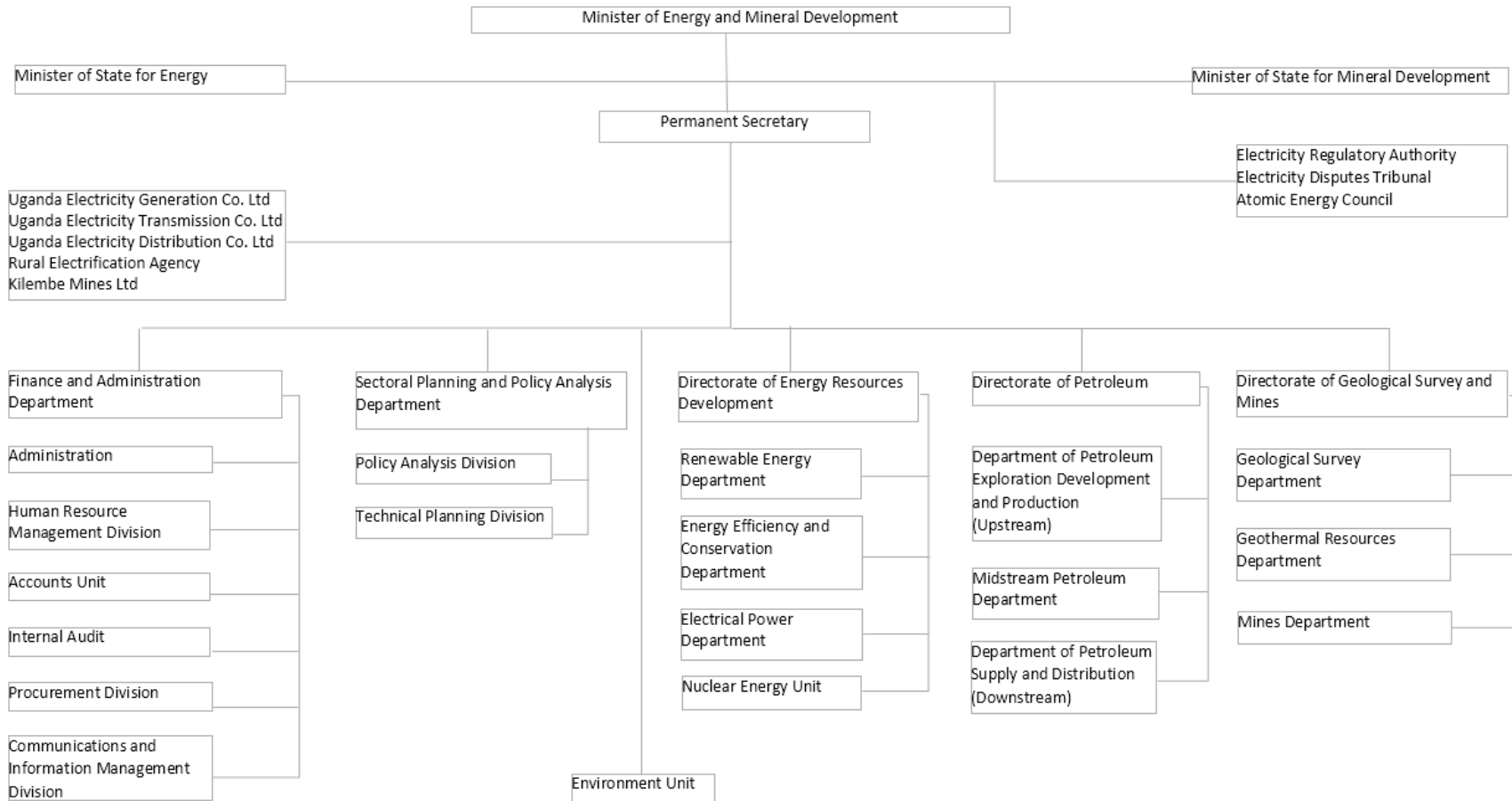
- **Inadequate resource envelope** to enable undertaking of core activities in an effective and efficient manner. This is further worsened by the delay of the Ministry of Finance, Planning and Economic Development (MoFPED) in releasing the Appropriation in Aid (AIA).
- **Access to surface rights:** There is need to harmonize the relevant laws to enable easy access to land by the potential investors in the energy and mineral sector.
- **Procurement:** Bureaucratic and lengthy procurement procedure.

6.2 Concluding Remarks

The Ministry, in line with its mandate, will continue to vigorously implement the plan for meeting the electricity supply needs of the country; monitor the oil and gas activities including the drilling operations and refining. The ministry will also ensure competition and security in the supply of petroleum products. In addition, the Ministry will continue to encourage firms that intend to carry out mineral exploration all over the country with the view of enhancing mineral production and value addition.

APPENDICES

Appendix 1: The Ministry Organization Structure



Appendix 2: Capacity Building

i. Directorate of Petroleum

Long term training

Staff undertook long-term training at Masters level in various Universities. These are Dickens Asiimwe Katta and Francis Elungat in the areas of Petroleum Law, James Okema in Pipeline Engineering, Racheal Mugabi in Oil and Gas Chemistry, Herbert Mugizi in Energy Trade and Finance, Isaac Kabuye in Oil and Gas Law, Shallon Niwamanya in Environmental Toxicology and Pollution monitoring, and Sebikari Gloria in Corporate Social Responsibility and Energy Studies.

Internship Training

In promoting the development of skills in the oil and gas sector in Uganda, the directorate offered internship training opportunities for thirteen students from different Universities in Uganda in various disciplines.

Collaboration with Institutions of Higher Learning

The directorate is collaborating with Makerere University and Kyambogo University to supervise final year students' research programs especially at master's level. The directorate also offers support to AAPG and SPE student chapters to host visiting international lecturers in oil and gas. Support is also offered to participate in international competitions with other universities offering petroleum geosciences.

Short-term Training Courses, Workshops and Conferences

- a. One member of staff undertook a 10 weeks Reservoir Engineering Course at Japan Oil and Gas Metal Corporation (JOGMEC) in Japan from 12th January to 27th March, 2015.
- b. Three members of staff participated in the East African Research Exchange Visit to King Abdullah Petroleum Studies and Research Center (KAPSARC) in Riyadh Saudi Arabia from 1st to 26th February 2015 for a short course in macro-economic and energy econometric modelling.
- c. Two members of staff attended a course on spatial ecological land use planning for oil and gas landscapes organised by ESIPPS International Limited in partnership with the Department Of Geography, Geo-Informatics and Climatic Sciences (GGCS), Makerere University during February 2015.
- d. Two members of staff attended an executive course on the use of evidence in policy making from 23rd to 27th February 2015 at the Civil Service College Uganda, Jinja.
- e. Two members of staff attended training for government communications officers and web social media analysts from Government Institutions that was organized by the National Information Technology Authority- Uganda and Office of the Prime Minister during March 2015.
- f. Four members of staff attended the sixth session of the expert group on resource classification from 29th April to 1st May 2015 at Palais des Nations in Geneva, Switzerland.

- g. Two staff members attended the annual International Association of Impact Assessment (IAIA) 2015 conference that was held from 18th to 24th April 2015 in Italy.
- h. Two staff members participated in the Society of Petroleum Engineers (SPE) Produced Water Handling and Management Symposium on 20th and 21st May 2015 in Texas, USA.
- i. One staff member attended the 38th International Association of Energy Economics (IAEE) International Conference from 25th to 27th May, 2015 in Turkey.
- j. Three staff members participated in training on Uganda Labour Laws- Aligning Organisational Policies and Procedures to the Law Organised by Newton Communications Solutions from 11th to 12th June, 2015 in Kampala.
- k. A team of eight staff members from the Directorate of Petroleum, Ministry of Education and Sports, Uganda Petroleum Institute-Kigumba, Makerere University attended the 11th Getenergy Global Education and Training Event from 15th to 17th June 2015 in London. The team visited specialized training and accreditation institutions in Aberdeen, Scotland, namely, Robert Gordon University, OPITO and ASET.
- l. Two staff members attended the 2nd Annual Oil and Energy Services Local Content Convention from 16th to 19th June in Nairobi, Kenya.
- m. Three staff members participated in the New Petroleum Producers' Discussion group meeting in Dar es Salaam Tanzania from 29th June to July 2nd 2015. The meeting was organized by the Commonwealth Secretariat and the Royal Institute of International Affairs UK.
- n. Three staff members participated in Total Enhanced Oil Recovery Studies in Pau, France 30th June to 4th July 2015.

ii. Directorate of Energy Resources Development

LONG TERM TRAINING

No	Name	Designation	Courses/Institutions	Remarks
1	Nsubuga Emmanuel Sande	Energy Officer	Msc. Sustainable Energy Systems, Edinburgh, UK	Completed
2	Baleke Ssekulima Edward	Energy Officer	Msc Electrical Power Engineering, Masdar Institute of Science and Technology, Abu Dhabi	On-going
3	John Walusimbi Kigozi	Energy Officer	Msc. Electrical Power, Chalmers University of Technology, Sweden	On-going
4	Ibrahim Mukeera	Electrical Engineer	Msc. Electrical Energy Systems, Cardiff University, UK	Completed
5	Karungi Ann Lylean	GIS Officer	Msc. Environmental Management, Makerere University, Uganda	On-going
6	Miriam Natabo	Energy Officer	Master of Science in Energy and Sustainability, University of Southampton, United Kingdom	Ongoing

Scientific Visit to Republic of Korea on Nuclear Technology

Mr. Emmanuel Ajutu, Ag. C/SPPAD, Isaac Vivian Kinhonhi, Principal Economist, ERA, Mr. Jimmy Collins Omona, Hydro-mechanical Specialist, UEGCL, Mr. Mark Namungo, Electrical Engineer, UETCL, Ms. Nafuna Sarah, Head, NEU, Mr. Thomas Ocilaje, Nuclear Engineer, NEU, Ms. Abbo Damalie Noel Ofumbi, Nuclear Engineer, NEU and Emmanuel Wamala, Nuclear Engineer, NEU participated in a Scientific Visit to Republic of Korea on Nuclear Technology, 1st – 5th June 2015.

Scientific Visit to USA on Introduction of Nuclear Power

Dr. Abel John Julian Rwendeire, Deputy Chairperson, National Planning Authority, Dr. Maxwell Onapa Otim, Member, Atomic Energy Council, Mr. Sabbiti Baguma, Nuclear Safety Engineer, Mr. Alex Twesigye, Nuclear Scientist, Mr. John Mathias Rusoke Tagaswire, Major, Ministry of Defence, Ms. Rachael Lutalo Nsiyona, State Attorney, First Parliamentary Counsel, Ms. Naomi Obbo, Environmental Impact Assessment Officer, NEMA, Ms. Valeria Ntege Nakaweesa, Estate Engineer, Mr. Matovu Yusuf Bukenya, Communications Specialist, Alex Nuwagira, Procurement Officer, Mr. Patrick Muhindo, Ag. Senior Economist, Sector Planning and Policy Analysis Department and Mr. Joseph Ochieng Odoi, Principal Accountant participated in a scientific visit to Nuclear Power Institute, Texas A&M University, USA on Policy and Legal Framework which was conducted from 6th to 17th July 2015.

Scientific Visit to IAEA, Vienna on Nuclear Power Infrastructure Development

Five (5) officers from the Ministry, Electricity Regulatory Authority and Uganda Electricity Transmission Company Limited participated in a Scientific Visit at the IAEA, Planning & Economic Studies Section (PESS) from 30th November – 08th December 2015 to review Energy planning models; MAED and MESSAGE.

TECHNICAL MEETINGS

- i. Mr. Sabbiti Baguma, AFRA National Coordinator participated in the 26th Technical Working Group Meeting (TWGM) of AFRA, held in Marrakech, Kingdom of Morocco, from 20th to 24th July 2015.
- ii. Mr. Emmanuel Ajutu, Ag. C/SPPAD and Mr. Emmanuel Wamala, a Nuclear Engineer participated in a Technical Meeting on Topical Issues in the Development of Nuclear Power Infrastructure, in Vienna, Austria, from 3rd – 6th February 2015.
- iii. Mr. Emmanuel Wamala participated in a Technical Meeting on Launching the New African Network for Nuclear Power Infrastructure Development 6th – 9th July 2015, Vienna, Austria.
- iv. Mr. Denis Tusiime participated in the Nuclear Energy Management Programme course in Trieste, Italy from 2nd -13th November 2015.
- v. Mr. Ocilaje Thomas participated in the Interregional workshop on good practices on NORM residues and radioactive waste management, from 19th – 23rd October, 2015, in Kuala Lumpur, Malaysia.
- vi. Mr Ocilaje Thomas and Mr. Mike D. Tumwikirize participated in a Technical Meeting on Establishing a National Position for New Nuclear Power Programmes and the Pre-Feasibility Studies from 27th – 31st October, 2015.

Workshops

- i. Ms. Abbo Noel Damalie Ofumbi and Denis Tusiime Tungotyoko participated in a workshop on pre-feasibility/feasibility study on nuclear power programme; from 15th – 19th November 2015, in Algiers, Algeria.
- ii. Abbo Noel Damalie Ofumbi attended the Regional Training on Nuclear Response Plan for Nuclear Security Events-Methodology and Capability Workshop from 7th – 10th December 2015, in Arusha, Tanzania.

The 23rd Women in Nuclear Global Annual Conference

One (1) officer from Ministry of Energy and Mineral development attended the 23rd Women in Nuclear (WiN) Global Annual Conference from 24th to 28th August 2015 in Vienna, Austria.

iii. Directorate of Geological Survey and Mines

Industrial training

The Directorate supervised students pursuing awards of Bachelor of Science in Chemistry, Industrial Chemistry, Petroleum Science and Management, and Chemical Engineering.

A total of nineteen (19) students from Makerere University, Nkumba University, University of East Africa and Institute of Survey and Land Management were trained in Principles and application of GIS.

Industrial training on information management was provided to Ms. Agnes Nyangoma Keirungi a student from Makerere University School of Information.

In-house training

From 3rd – 4th March 2015, the Geophysics technical staff participated in the in-house hands-on training on the assembling and operation of the newly acquired sets of EPOCH Differential GPS units for application in Gravimetric Surveying. The Laboratory staff undertook in-house training on the use of the newly acquired equipment in the Mineral Dressing Laboratory. These included installation and operation of the following equipment: KC-MD3 Flsmidth Knelson Centrifugal Concentrator, Pulp density balance, and slurry pump.

Long Term Training

(i) Completed

Ms A. Nambojera, Senior Assistant Geological Officer completed a two years post graduate programme leading to the award of a Master of Science (Geospatial Science) at Curtin University, Bentley-Perth, Western Australia. Ms P. Namulindwa, Office attendant completed a Diploma in Business Administration at Nkumba University.

(ii) Ongoing

Mr. Andrew Katumwehe, Senior Geophysicist is currently on for a four year Doctorate of Philosophy (PhD) in Exploration Geophysics at Oklahoma State University, United States of America.

Mr. H Ngada, Ag. Principal Geoscientist continued to pursue a Post Graduate Diploma in Business Administration at Uganda Management Institute.

Ms. G Lajwe, Ag. Senior Chemist continued to pursue a Master's of Science Degree in chemistry at Makerere University, Kampala.

Mr. David Ssebagala, Inspector of Mines continues to pursue an 18-month master's programme in Mineral Economics at the University of Perth in Australia.

Mr. Mayanja Jackson, Mining Engineer continues to pursue a Master's Program on Oil, Mining and Gas law at the University of Dundee, Scotland.

Mr. J Kwezi (Laboratory Attendant) is pursuing a Bachelor of Science Degree in Chemistry at Makerere University, Kampala.

Ms. Dorothy Namuli (Library Attendant) continued to pursue a Master's degree in Information systems management at Makerere University Kampala.

Mr. M Nganda, ITO (Information Technology Officer) is undertaking a Master's degree in Information Technology at Uganda Martyrs University, Kampala.

Ms S. Natuhwera, Office Attendant continued to pursue a Bachelor of Business Administration at Nkumba University.

Mr. M. Muwonge, Records Assistant continued to pursue a Bachelor of Library and Information Science from Makerere University.

Ms. R. Mugenyi, office attendant continued to pursue a Diploma in Records and Information Management at UMI.

Ms. Bena Nassiwa, Office Attendant, continues to pursue a Bachelors Degree in Records and Information Management at Nkumba University, Wakiso.

Ms. Annet Atwine, Senior Geologist, continues to pursue a Master of Business Administration at Eastern and Southern African Management Institute, Uganda.

Short term training

- Ms. Agnes Alaba (Ag. AC/Geodata) participated in a training workshop in leadership and organizational Development at DTI, Swaziland from 10th -31st July 2015.
- Mr. Henry Onyege, Chemist attended training in Geochemical Mapping and Environmental Geochemical Survey Technology in Beijing, China, from 10th to 31st August, 2015.
- Ms. Jacinta Achieng, Chemist attended training on Enhancement of the Planning Capacity of Geothermal Power Development, from 1st to 25th September, 2015, in Kyushu, Japan. The

training is part of several training and dialogue programs of Japan International Cooperation Agency (JICA) being implemented as part of the official Development Assistance (ODA) of the Government of Japan to the Government of Uganda.

- Mr. Chris Lubangakene, Ag. Assistant Commissioner – Laboratories attended an Executive Course on the use of Evidence in Policy Making at the Civil Service College Uganda, in Jinja, from 31st August to 4th September, 2015. The training was organised under the Development Research Uptake in Sub-Saharan Africa (DRUSSA) Programme which in Uganda is being implemented by Uganda National Council of Science and Technology (UNCST), Economic Policy Research Centre (EPRC), and the Ministry of Public Service.
- Ms. Stellah Pule (Ag. Senior Geoscientist - GIS) completed the short course from 21st September to 13th November 2015 training in Geoinformatics at the Indian Institute of Remote sensing (IIRS), India.
- Mr. Chris Lubangakene, Ag. Assistant Commissioner – Laboratories attended a training for Contracts Committee members of Procurement and Disposal Entities (PDEs) organized and facilitated by Public Procurement and Disposal Authority (PPDA), from 29th to 30th October, 2015, at Ridar Hotel, in Seeta, Mukono.
- Mr. Henry Onyege, Chemist and Mr. Isaac M. Ajule, Laboratory Technician participated in training on Operation, Maintenance and Repair of Analytical Equipment in India, sponsored by the Indian Government from 9th December 2015 to 2nd February, 2016.

Conferences, Workshops, Seminars and Meetings

- Mr. Chris Lubangakene, Principal Mineral Dresser participated in a consultative meeting organized by Electricity Regulatory Authority (ERA) to discuss the proposed quality of service standards and key performance indicators for electricity supply, on 22nd January 2015, at Imperial Royale Hotel, Kampala.
- Ms. Sylvia Nassaka (Senior Documentation Officer) participated in a half day workshop on status update on data captured by Uganda Registration Services Bureau (URSB) at their offices in Kampala on 25th January 2015.
- 20 DGSM staff participated in training courses to build capacity to implement the Mining Policy Framework in Uganda: Social and Economic Benefit Optimization, at Grand Imperial Hotel, Kampala, from 2nd to 4th February, 2015; and Mine Closure and Post Mining Transition, at DGSM, from 5th to 6th February, 2015.
- Eng. Joseph P. Okedi, Ag. Assistant Commissioner (Inspections and Monitoring) attended and presented at The National Workshop for Civil Society Participation in the Mineral Policy, Law and Taxation Review Process organized by Action AID, Safer World, ECO on 4th February 2015. The output was the CSO position paper on Mineral Policy, Law & Fiscal Review which was submitted Eng. Joseph P. Okedi, the Inter-Ministerial Committee (IMC) Coordinator.
- Mr. Zachary Baguma, Acting Assistant Commissioner and Mr. Chris Lubangakene, Principal Mineral Dresser participated in an Experts meeting, from 2nd to 6th Feb 2015, to review the draft report on iron, steel and metal processing value chain study in East Africa community, in Kisumu, Kenya.

- Mr. Edwards Katto (Ag. Director), Ms. Agnes Alaba (Ag. AC/Geodata), Mr. G. Data (Senior Geologist) and Isaiah Tumwikirize (geophysicist) participated in a mineral investment promotion at Mining Indaba Investment conference from 4-9th Feb. 2015.
- Over 20 DGSM staff attended a training on Legal, Policy and Regulatory Requirements for Uranium Exploration and Mining, organized by the International Atomic Energy Agency (IAEA) under the project “Strengthening the National Capacity for Uranium Exploration and Evaluation (UGA 2/002)” from 23rd to 27th February, 2015 at the Directorate of Geological Surveys and Mines.
- G. L. Nassuna (Principal Documentation Officer) and Gabriel Data (Senior Geologist) participated in Prospectors and Developers Association of Canada (PDAC) Conference from 28th February to 4th March 2015.
- Mr. John Kennedy Okewling, Mining Engineer represented Eng. Joseph Okedi, the ICGLR Committee Member at the 11th meeting of the ICGLR Regional Committee on the Regional Initiative on Natural Resource (RINR) held on 19th and 20th March 2015 in Nairobi, Kenya.
- G. L. Nassuna (Principal Documentation Officer) participated in a Consultative meeting on National Service Delivery Survey, 20th March 2015.
- G. L. Nassuna (Principal Documentation Officer) attended and participated in Meeting for communication Officers for training to update MEMD website, 16th January 2015. The objective of the meeting for communication Officers is to identify strategies and principles for information dissemination, at MEMD, 24th March 2015.
- Eng. Joseph P. Okedi, Ag. Assistant Commissioner (Inspections and Monitoring) and Mr. Vincent Okedi attended the Civil Society Coalition on oil and Gas and Parliamentary Forum on Oil and Gas on 20th and 21st March, 2015 in Kampala at Speke Resort Munyonyo. The dialogue on governance of extractives in E. Africa was organized by the Advocates Coalition for Development and Environment (ACODE) - a public policy research and advocacy think tank based in Kampala, Uganda Human Rights Commission, Civil Society Coalition on oil and Gas and Parliamentary Forum on Oil and Gas. The dialogue was aimed at sharing knowledge on the feasible mechanisms for managing extractives especially oil and minerals in a manner that creates lasting wealth.
- Mr. Vincent Kato attended a workshop on technical review of the soil map updating and mapping exercise at National Agricultural Research Laboratory (NARL) at Kawanda, near Kampala on the 1st April 2015,
- Mr. Henry Ngada (Ag. Principal Staff Cartographer) participated in a two (2) day training workshop on Procurement procedures at Sports View Hotel – Kireka, Kampala from 16th - 17th April, 2015.
- Mr. John Kennedy Okewling, Mining Engineer attended the meeting of the services of the ICGLR member states in charge of the fight against mineral fraud and smuggling held on 17th and 18th April, 2015 in Kinshasa, Democratic Republic of Congo.
- Mr. James Francis Natukunda (Ag. Principal geologist), Mr. Peter Maweje (Ag. Senior Geologist), Mr. Eriya Kahwa (Geologist) and Ms. Grace Lajwe (Ag. Senior Chemist) attended the World Geothermal Congress in Melbourne Australia from 19th to 24th April 2015.
- Mr. John Kennedy Okewling, Mining Engineer (OC/ Karamoja) and Nathan Mushetsya, Senior Mines Warden attended a workshop entitled “Know Your Mining Rights, Mineral

Legislation/Laws and Fiscal Transfers” held at Mt. Moroto Hotel in Moroto Town on 5th May, 2015.

- Mr. Vincent Kato (Ag. AC/Geology and Geochemistry) and Mr. James Francis Natukunda (Ag. Principal Geologist) attended a mandatory pre-bidding GRMF workshop in Addis Ababa Ethiopia from 6th to 7th May 2015.
- Edwards Katto (Ag. Director), A. Alaba (Ag. AC/Geodata), G. L. Nassuna (Ag. AC/Geoscience) participated in Meetings at the Berlin German Geological Survey Mining Association, Saxonian Ministry of Economy and Annual Beak Symposium, Germany Federation of International Mining and Mineral Resource (FAB), Mineral Economics German Mineral Resources (DERA) to promote the mineral potential of Uganda from 5th to 13th May 2015.
- Mr. Vincent Kato (Ag. AC/Geology and Geochemistry) attended food and environmental seminar at Protea Hotel, Kampala organized by Agilent Technologies, suppliers of analytical equipment on 21st May 2015.
- Ms. Sylvia Nassaka (Senior Documentation Officer) attended and participated in meeting for communication officers for the preparations for the Energy Week exhibition on 23rd June 2015 at Amber House.
- DGSM participated in annual MEMD Joint Sector Review from 15 - 16th October, 2015 at the Common Wealth Speke Resort, Munyonyo.
- Ms. Grace L. Nassuna (Ag. AC/Geoscience) participated in a Gender and Extractive industry meeting at UN Women, UNDP Boardroom, Plot 11 Yusuf Lule Road on 23rd October 2015.
- Mr. Gabriel Data (Ag. Principal Geologist) and Mr. Vincent Kedi, Ag. Senior Engineer (Mining) attended the 11th Annual General Meeting of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) in Geneva, Switzerland from Monday, October 26th – Friday, October 30th 2015.
- Ms. Grace L. Nassuna (Ag. AC/Geoscience), Martin Nganda (ITO), IT staff from PEPD and 3 members from NITA-U held a meeting on the use of the NBI of NITA-U for internet services on 30th November 2015 at DGSM Boardroom.
- Ms. Grace L. Nassuna (Ag. AC/Geoscience) attended a User Departments’ 2 days short training in procurement and disposal process at Piatto Restaurant, plot 20 Lumumba Avenue on 4th to 5th November 2015.
- Mr. Godfrey Bahati (Ag.C/Geothermal), Ms. Agnes Alaba (AC/Geodata), Mr. Vincent Kedi, Ag. Senior Engineer (Mining) and Mr. Gabriel Data (Ag. Principal Geologist), attended a Regional training workshop on Environment, Community, Health and Safety in the low-value minerals and materials (LVMM) sector, at the African Union Commission Headquarters, Addis Ababa, Ethiopia from 9th to 12th November, 2015.
- Mr. John Kennedy Okewling (Mining Engineer/OC-Karamoja) participated in an Extraordinary Meeting and Peer-Learning Workshop of the International Conference of the Great Lakes Region (ICGLR) Regional Committee on Natural Resources from 25-27 November, 2015 at the Grand Legacy Hotel, Kigali in Rwanda.
- DGSM technical staff attended the Mineral Policy and Mining Legislation Review meetings at Munyonyo Speke Resort Hotel from 15th -17th October 2015 and from 1st - 4th December 2015 at DGSM. DGSM continued to hold Bi-Monthly meetings with the World Bank consultants and the IMC-Task Force to finalize the review of the Mineral Policy.

- Mr. John Kennedy Okewling (Mining Engineer/OC-Karamoja) and Unity Birungi Sudan (Geologist) attended a Regional Meeting on the Prevention of Future Legacy Sites in Uranium Mining and Processing from 14-15 December, 2015 at the International Atomic Energy Agency (IAEA) Headquarters in Vienna, Austria.
- Seven (7) DGSM staff participated in flexicadastre user support organized by Spatial Dimension (Pty) in DGSM Boardroom and reviewed the Configuration settings to improve the Mining Cadastre system, incorporated working rules in flexiCadastre software, and revised the workflows (Tailor made) to DGSM Mining Cadastre system.

iv. FINANCE AND ADMINISTRATION DEPARTMENT

No	Name	Title	Courses/Institution	Remarks
1	Nadiope William	Development Analyst	Master in Business Administration, Coventry University, UK	Completed
2	Nagwomu Alfred	Senior Human Resource Officer	Master in Business Administration (Human Resource Management) Eastern and Southern African Management Institute, Uganda	On-going