MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

DEPARTMENT OF GEOLOGICAL SURVEYS

P.O. Box 9, ENTEBBE

PROSPECTING FOR URANIUM IN KOBOGA DISTRICT

PERFORMANCE REPORT FOR FY 2024/25

JULY, 2025

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ACRONYMS

AG	Acting
ASM	Artisanal and Small-scale Miners
EARS	East African Rift System
EU	European Union
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRD	Geothermal Resources Department
GSD	Geological Survey
IAEA	International Atomic Energy Agency
Ltd	Limited
MEMD	Ministry of Energy and Mineral Development
MD	Mines Department
MOFPED	Ministry of Finance Planning and Economic Development
MOU	Memorandum of Understanding
SDS	Service Delivery Standards
UK	United Kingdom

EXECUTIVE SUMMARY

The Department of Geological Survey is mandated to *establish and promote the Development of Mineral Resources for Social and Economic Development*. Key priority areas that the department include:

(i) Providing a conducive Legal and Regulatory framework to boost investment in the Mineral Sector, spur industrial development, job creation and poverty reduction;
(ii) Institutional and human resource capacity development to harness optimal benefits from the mineral resources;
(iii) Mineral Exploration, Development and Value-Addition Promotion for Socioeconomic Development of Uganda;
(iv) Promoting Health, Safety and Environment in the mining industry and the people of Uganda, and
(v) Promoting Regional and International cooperation for research and development in the mining industry.

PROGRESS ON POLICY LEGAL AND REGULATORY FRAMEWORK

This mainly involved reviewing of the Earth Scientists Registration Board Bill 2024. A stakeholders' consultation workshop on the Bill was conducted at Fairway Hotel Kampala from March 18th -20th, 2025. Review, compilation and submission of the views gathered from the workshop was made to the Office of the Attorney General for incorporation into the Bill. Certificate of financial implication was secured MOFPED and Cabinet Memo was also drafted. Submission of the Cabinet Memo to the Cabinet to appraise it on provisions of the Bill awaits response from the AG's Chambers.

Service Delivery Standards (SDS) and client charter for GSD were also developed and incorporated into the MEMD SDS and charter respectively.

PROGRESS ON CAPACITY DEVELOPMENT

Infrastructure Capacity development: This involved purchase of a number of equipment including: a plotter, printers, desktops and laptops to support service delivery. Procurement for equipment and services to support accreditation of the Laboratory as required by ISO/IEC 17025:2017 was also at various stages by close of the FY2024/25.

Human Resources Capacity: One Officer completed his MSc degrees in Analytical Chemistry from Kings University, London, UK and one Officer continue to pursue a

PhD in Australia. Also, a number of short-term trainings locally and internationally were undertaken.

PROGRESS ON MINERAL EXPLORATION, DEVELOPMENT, AND VALUE-ADDITION PROMOTION FOR SOCIOECONOMIC DEVELOPMENT OF UGANDA

Mineral exploration: A number of exploration compaigns for various minerals were undertaken both under recurrent and SUMIP project**.** These included: geological investigation Bukusu Iron Ore Prospects to establish a baseline for future work and Uranium Prospecting in Kiboga and Nakaseke Districts. Nakaseke prospect exhibits prospective values compared to that in Kiboga, while field investigation shows that Bukusu is not just a single deposit but a large and coherent mineralized system spanning several square kilometres.

Others mineral exploration campaigns included: regional geochemical survey in Kyankwanzi, Kiboga, Mubende, Mityana, Nakaseke, Luwero, and Nakasongola districts, Reconnaissance survey of uranium anomalies was undertaken as recommended by the IAEA experts to collect data to enable ranking of the anomalies to inform further exploration decisions, Lwensakara Uranium Sample analyasis and data interpretation, Nyaituuma-Buraru iron ore prospecting in Hoima District, Detailed Geological mapping of iron ore at Mugabuzi, Sembabule, Reconnaissance for Manganese in Isandra Village, Kyenjojo District, Wolfram Exploration in Kirwa, and prospecting for pegmatite minerals in Ntungamo District.

Exoploration for uranium at Lwensakala revealed values for uranium to increase with depth, Iron ore at Nyaituma was found to be ferruginised mudstones and the mineralization being structurally controlled by a shear zone, Mugabuzi iron ore Mugabuzi was found was both massive iron ore bodies, and Shear zone-hosted mineralization while prospecting for pegmatite minerals in Ntungamo District onfirmed presence of Lithium. Nine locations with manganese mineralization were also discovered at the Isandra Manganese prospect, Kyenjojo District.

Airborne Geophysical Survey of Karamoja Project also exited successfully, bringing Uganda's geophysical survey (total magnetics and radiometrics) to100% complete, as at 30/6/2025. A number of geological, geophysical and geochemical datsets acquired in Karamoja region, parts of Mt. Elgon areas and Lamwo District during the process were also added to the database.

Mineral Sector Development Promotion: The department continued with sector development promotion through geoscientific data dissemination physically at GSD Offices, website (www.dgsm.go.ug) and GMIS portal, and at various local and international conferences including Uganda Construction and Infrastructure Forum

and Exhibition, East African Trade and Investment Forum, Environment and Natural Resources Committee of Parliament during their induction to the Energy, 13th Annual Mineral Wealth Conference, Energy and Minerals Week, Africa Mining Indaba in Cape Town, delegation of investors from China invited by the Hon. Minister of State for Investment and Renewable Energy conference 2024 and Expo, among others. Mineral value addition was also promote,

PROGRESS ON PROMOTING HEALTH AND SAFETY IN THE MINERALS AND MINING INDUSTRY

Geohazards investigations in Kisoro-Kigezi Sub Region: Investigations undertaken included geotechnical and geological assessment of the widening cracks on slopes of burango hill, mbuga parish. The study revealed the area to be at high risk of landslide both in the short term and long term, and that if it occurred, it would be very disastrous, since majority live in semi-permanent houses. It was recommended that communities stop overloading the slopes through piling of stones, soils and materials as short term measure. Adherence to The Physical Planning Act, 2010 provisions especially regulating construction, would be long term and lasting solution.

Earthquake Monitoring and advisory services: Interpretation of data collected revealed more earthquakes events in FY2024/25 occurring in the country compared to the past 5 years, underscoring Uganda's vulnerability to seismic activity, because it is a host to a long stretch of part of the East African rift system (EARS). It iw therefore recommended that, construction designs and recommendations are followed while constructing houses, roads, dams, railways and any infrastructure to resist earthquakes, save life and property.

PROGRESS ON PROMOTING REGIONAL AND INTERNATIONAL COOPERATION

PanAfGeo+ Country window project in Uganda: Mainly involved signing an MOU between Uganda and the Geological Survey of Slovenia to jointly implement an EU funded PanAfGeo+ Country window project in Uganda. Plans are underway to implement the project in mineral exploration, quantification and investment promotion.

Sustainable Development of the Mining sector of Uganda (SDMU): GSD, together with MD, GRD and GIZ is involved implementing SDMU project, an EU and Germany funded project to develop the mineral sector including putting in place a National Mineral Data Base (NMDB)

Inter-laboratory cooperation: GSD extended requests for Cooperation in Inter-laboratory Comparison required by ISO/IEC 17025:2017. Affirmative responses were received from the African Minerals and Geosciences Centre (AMGC), Geological Survey of Tanzania, and Mintek (South Africa).

Other crossing cutting issues: included participation in the gender mainstreaming training for women and men in Leadership in the MEMD which was Organised By Giz At Munyonyo Speke Resort Hotel, Kampala and held between October 21st and 24th 2024

1 INTRODUCTION

The Ministry of Energy and Mineral Development is mandated to establish, promote the development, strategically manage and safeguard the rational and sustainable exploitation and utilization of energy and mineral resources for socio-economic development. The Geological Survey (GSD) contributes to the establishment and promotion of the development of mineral resources. In line with the NDPIII programmatic approach, GSD falls under the ***Mineral Development Programme: 01 Mineral Exploration, Development and Value Addition.*** GSD, particularly, undertakes geological surveys and mineral exploration to collect geoscientific data that is used in: 1) establishing the mineral potential of the country, 2) promoting the development of mineral resources and value addition, 3) monitoring of earthquakes and other geological hazards, 4) research and Development, and 5)utilization in other sectors of the economy.

2 INSTITUTIONAL FRAMEWORK

The Geological Survey consists of Four Divisions i.e. Geology, Mineral Laboratory, Geophysics and Seismology, and Geodata. These Divisions are further divided into Sections in order to effectively execute the mandate.

3 PERFORMANCE OF THE DEPARTMENT

3.1 POLICY FORMULATION REGULATION

i) Compiled the FY2023/24 GSD performance report and submitted to the Sector Planning and Policy Analysis Division (SPPAD) for incorporation into the MEMD performance report
ii) Conducted a stakeholders' consultation workshop on the Earth Scientists Registration Board Bill 2024 at Fairway Hotel Kampala from March 18th -20th, 2025. Review, compilation and submission of the views gathered from the workshop was made to the Office of the Attorney General for incorporation into the Bill.
iii) Participated in a 3days MEMD retreat with the) Parliamentary Committee on Environment and Natural Resources (PCEMR from March 11th -13th , 2025 at Speak Resort Munyonyo to appraise new MPs on Minerals, Energy and Oil & Gas NDPIII performance and NDPIV plans
iv) Developed Service Delivery Standards (SDS) and client charter for GSD that were incorporated into the MEMD SDS and charter respectively.

v) Participated in Performance Management Plan (PMP) development meeting at Amber House (26/6/2024) workshop at Civil Service College , Jinja (6-9/8/2024), Meeting at GSD (26/8/2024), under leadership of M&E, HR Divisions/MEMD
vi) Printed and posted policy statements on Impartiality, Confidentiality, and Complaint, as well as the Certificate of Registration of Work Place (Occupational Safety and Health) for the Geological Survey and Mineral Laboratory issued by the Ministry of Gender Labor and Social Development, in all the three main laboratories.
vii) Laboratory staff participated in internal audit in accordance to ISO/IEC 17025.
viii) Reviewed and drafted additional documentation required by ISO/IEC 17025:2017, and these included: Standard operating procedure (SOP) for performing inter-laboratory comparison tests, SOP for checking weighing balances, SOP for checking ovens/ furnaces, Laboratory Waste Management Plan, GSML Calibration Plan, Equipment Logbook, Equipment Inventory, and Analyst Workbook.
ix) Provided feedback to First Parliamentary Council on a Draft of the Mining and Minerals (Geological Survey and Mineral Laboratory) Regulations, 2025 which were received from the Attorney General's Chambers on 10th April, 2025 and have now been finalized for signing by the Minister.
x) Participated in a working meeting on 22nd October, 2024 with the drafting team for the Mining and Minerals (Geoscience Services) Regulations from Ministry of Justice and Constitutional Affairs, which regulations are to regulate laboratory services and sale of geoscientific data and information.
xi) The Geological Surveys and Mineral Laboratory in Entebbe was assessed for ISO/IEC 17025:2017 accreditation from 29th July to 2nd August, 2024 by assessors from Kenya Accreditation Service (KENAS) and the three (3) month window in which to respond to non-conformities elapsed and the laboratory now awaits a verdict on whether it is to be recommended to the International Standardization Organisation (ISO) for accreditation.

3.2 INSTITUTIONAL CAPACITY BUILDING

3.2.1 Infrastructure

i) Purchased a number of equipment including: a plotter, printers, desktops and laptops to support service delivery.
ii) Procurement was initiated for calibration of all weighing balances, ovens and furnaces in the laboratory as required by ISO/IEC 17025:2017 that measurement results are traceable to the International System of Units (SI) and subsequently Uganda National Bureau of Standards (UNBS) was paid to undertake the calibration.

iii) Contract for supply of standards for the AAS, ICP-OES, ion chromatography; certified reference materials for the carbon sulfur analyzer and XRF; and chemicals and reagents by M/s. Creative Laboratory Uganda Limited worth UGX 985,245,000 is underway.
iv) Local purchase order was issued to M/s. LabX and it supplied acids under contract of ref. no. MEMD/SUPLS/2023-2024/00029.
v) Conducted a market survey of laboratory gases to inform the procurement of laboratory gases where the bid price was higher than the estimate. Following the survey, the market price was found to be higher than the estimate of UGX 100 million by UGX 5 M to UGX 17 M. However, the procurement was not concluded.
vi) The Extractive Industries Laboratory Infrastructure Expansion Project underwent Project Preparation Committee (PPC) and Programme Working Group approval on 29th November, 2024 and 18th December, 2024, respectively and has been uploaded onto the Integrated Bank of Projects (IBP) system, pending submission. The concept was programmed for presentation to the Development Committee of the Ministry of Finance, Planning and Economic Development on 17th March 2025 but unfortunately it was not given the opportunity because the Committee required the Mineral Development Programme to first provide it with a strategy for the development of artisanal and small scale mining and as well as the strategic plan for the Uganda National Mining Company which it had asked for earlier.
vii) Presented the Mineral Laboratory Infrastructure Expansion Project concept on 15th October 2024 to the technical staff of the departments of Geological Survey (GSD), Geothermal Resources (GRD), and Mines (MD, and to the Project Preparation Committee Secretariat on 13th November, 2024 at Amber House.
viii) Letter to Accountant General seeking waiver to procure service and maintenance of ICP-OES, Carbon Sulfur Analyzer, benchtop XRF, and other specialized laboratory equipment off the eGP because the service providers are from outside of the country and have not been responsive when requested to register and use the eGP, was drafted and submitted.
ix) The Uganda National Bureau of Standards (UNBS) was paid for calibration of weighing balances, ovens, and furnaces.
x) Procurement was re-initiated for service and maintenance of electromechanical equipment under framework contract and M/s Ficah was successfully contracted.
xi) Procurement for service and maintenance of fume hoods was concluded and M/s. Ran Engineering Solutions Limited was contracted at a contract sum of UGX. 12,154,000 under framework contract.
xii) Spare parts and accessories for the repair as well as software upgrade of the GBC AAS were delivered.

xiii) Successfully concluded procurement for two (2) air conditioners to replace the one in the ICP-OES room which broke down and the two units were installed.
xiv) Procurement re-initiated for service and maintenance of electromechanical equipment under framework contract and M/s Ficah was successfully contracted.
xv) Procurement for service and maintenance of fume hoods was concluded and M/s. Ran Engineering Solutions Limited was contracted at a contract sum of UGX. 12,154,000 under framework contract.
xvi) Procurement re-initiated for service, maintenance and calibration of the ICP-OES, carbon sulfur analyzer, electromechanical equipment, and water purification unit.

3.2.1.1 Long Term Training

3.2.2 Human Resource Development

3.2.2.1 Long term

i) Ms. Catherine Nyakecho continues with her PhD studies in Western Australia.
ii) Mr. Julius Kwezi, Chemist completed his Master of Science in Analytical Chemistry from Kings University, London, UK.
iii) Ms. Stella Nankinga Continues to pursue her MSc in Natural Resources Management and Environmental

3.2.2.2 Short term training, conferences and workshops

International and National short-term training, conferences and workshops participated in by various staff members during the year included:

i) Nine laboratory technical staff and three interns from Kyambogo University attended the Method Validation and Uncertainty of Measurement Course for Testing and Calibrating Laboratories, from 16th to 20th June, 2025 at the Geological Survey and Mineral Laboratory in Entebbe. The course was administered by Ms. Felista Nyakoe of Africrest Solutions Limited of Kenya.
ii) Four laboratory staff: Ms. Maria Assumpta Namawejje, Ms. Alice Biira, Mr. Emmy Kafeero, and Mr. Emmanuel Omondi attended an induction /orientation training and took the Official Oath and Oath of Secrecy which all newly recruited staff under the Graduate Recruitment Employment undertook from 26th to 28th February, 2025 at the Mineral Development Programme and Petroleum House Boardrooms.

iii) Laboratory staff attended a virtual awareness training on the Occupational Safety and Health Management Information System (OSHMIS) organized by the Ministry of Gender, Labour and Social Development (MoGLSD) on 12th February, 2025. The training focused on enhancing the use of workplace registration and plant examination modules within the system and to provide an opportunity to discuss with experts regarding any challenges faced while using the system.

iv) Mr. Henry Onyege, Senior Chemist; Ms. Naomi M. Nangoku, Senior Mineral Dresser; Ms. Stella Nankinga, Geologist; Mr. Eddy Miiro, Mineral Dresser; and Ms. Maria Assumpta Namawejje, Chemist attended training sessions which were part of the International Atomic Energy Agency (IAEA) Expert Mission on the Systematic Prospecting Analysis for Uganda's Uranium Exploration Programme, from 3rd to 4th and 13th to 14th February, 2025 at K Hotel, Entebbe.

v) Mr. Eddy Miiro, Mineral Dresser made a presentation to technical staff of the Departments of Geological Survey, Geothermal Resources, and Mines of his Masters of Science thesis on hydrometallurgical processing of rare earth elements from iron adsorption clays on 15th October 2024.

vi) Procurement was initiated for training laboratory staff on Implementation of ISO/IEC 17025:2017 general requirements for the competence of testing and calibration laboratories, internal audit for testing and calibration laboratories, and Method validation and measurement uncertainty.

vii) Laboratory staff attended the presentation of the findings of the drilling of nine (9) iron ore prospects in South Western Uganda by ADT Africa Limited and the Kalem Consultants Group under a project being funded by the European Union on 22nd May, 2024 in the Mineral Development Programme Main Boardroom in Entebbe.

viii) Laboratory technical staff undertook a field trip to Namakera Vermiculite Mine on 7th April, 2025 to among others understand the operations of the vermiculite mining and processing operation and established their laboratory testing needs and that for regulatory oversight by the Ministry of Energy and Mineral Development.

3.2.2.3 Obituary

Colleagues, Ms. Grace Lajwe, Principal Chemist and Mr. James Francis Natukunda, Principal Geologist/Mapping passed on during the FY2024/25. May their souls rest in peace, Amen.

3.2.2.4 Geoscientific data/information sharing and technical cooperation

GSD continued acquisition of geoscientific data/information through geoscientific surveys, laboratory analyses as well as collaborating with other organizations. Various geoscientific data was disseminated or exchanged with other stakeholders. The online platforms at www.dgsm.go.ug and Geological and Mineral Information System (GMIS) were also updated and kept running for online users.Mineral exploration, promotion, production and value addition

3.3 MINERAL EXPLORATION, DEVELOPMENT, PRODUCTION AND VALUE-ADDITION PROMOTION

3.3.1 Mineral Exploration

3.3.1.1 Geological Mapping of Bukusu Iron Ore Prospects

The principal objective of the geological investigation across the Bukusu Iron Ore Prospects was to delineate the iron ore prospects through reconnaissance mapping and field assessment to establish a baseline for future work. Earlier Resource prospecting in this area indicates: 1) a minimum of 2 million tonnes at Surumbusa (Davies 1956), 2) 18 million tonnes of magnetite at Namakera in the soil down to 3.6m Nangalwe (Taylor 1953) and at least 0.5 million tonnes from six drill holes, with a high-grade bulk sample assaying 94.4% Fe_2O_3, 1.01% TiO_2, and 0.75% P_2O_5 (Davies 1956).

3.3.1.1.1 Results and Interpretation

Field observations and historical data present a compelling preliminary case for the Bukusu Carbonatite Complex as a potential major iron ore district. The initial interpretation of the field findings, pending laboratory analysis of collected samples, is as follows:

i) Extensive Mineralized System: Field mapping suggests Bukusu is not a single deposit but a large, coherent mineralized system spanning several square kilometres. The visual consistency of magnetite across all prospects indicates a very extensive weathering profile of a magnetite-rich parent body.
ii) Dual Target Models: The complex presents two distinct exploration targets based on outcrop and pit exposures: 1) a bulk-tonnage, surface-minable eluvial deposit comprising high-grade magnetite gravels (dominant in Sikusi, Sirumbusa, Khabutola and Nakhupa), and 2) a hard-rock, primary deposit of massive magnetite within carbonatite/syenite (evident in Nangalwe prospect).

iii) Polymetallic Potential: The constant field association of magnetite with vermiculite in the quarry exposures (Stops 39, 40, 44) suggests a polymetallic nature for the complex. This could, subject to assay confirmation, significantly enhance the overall economics of any future development through co-production or sequential mining.
iv) Quantitative Potential: The historical estimates, combined with the observed areal extent and thickness of mineralization, suggest a total resource potential across the complex that is substantial. This potential is conceptual and requires drilling and analysis to quantify, but it likely amounts to tens of millions of tonnes.

3.3.1.1.2 Recommendations

i) Immediate Laboratory Analysis: All collected samples (NANG, SIKU, SIRU, KHAB, NAKH series) must be urgently analyzed for Fe (total), Fe_2O_3, TiO_2, P_2O_5, V_2O_5, and SiO_2 to establish a definitive geochemical database and confirm the high-grade, low-impurity nature of the Nangalwe ore.
ii) Geophysical Survey: A high-resolution ground magnetic survey is the logical next step. This will accurately map the subsurface extent and geometry of the magnetite body, differentiate between eluvial and bedrock sources, and generate precise drill targets.
iii) Resource Definition Drilling: A phased drilling program is essential. This should begin with Reverse Circulation (RC) or auger drilling to define the volume and grade of the shallow eluvial deposit. This should be followed by diamond core drilling to test the depth, continuity, and grade of the primary bedrock mineralization, particularly at the high-priority Nangalwe target.
iv) Detailed Lithological and Structural Mapping: Large-scale mapping is required to understand the geological controls on the high-grade zone at Nangalwe, which could reveal vectors to other similar high-quality zones within the complex.

3.3.1.2 Uranium Prospecting in Kiboga and Nakaseke Districts.

Following the country-wide airborne geophysical surveys, different exploration blocks were zoned out (figure 1) and priority uranium anomalies were identified and classified. The objectives of the fieldwork were to: 1) Carry out reconnaissance mapping and prospecting of uranium anomalies 2 and 7 both belonging to Block 2, and 2) Carry out ground-truthing investigation of the above Uranium targets by carrying out ground radiometric geophysical traverses using a spectrometer.

Figure 1: Map of Uganda showing Uranium exploration blocks.

3.3.1.2.1 Findings.

Brecciated Laterite and laterite were obs[illegible], however in the brecciated zones with in block 2 anomaly 2 (plate 2) higher radiation values were recorded by the portable spectrometer (Plate 3) while as in non-brecciated laterites, the recorded values were low. It should be noted that, these contrast in the radiation readings are attributed by hydrothermal fluid that came to the surface with iron rich fluids during brecciation process. The iron rich hydrothermal fluid could be responsible for the anomalous values in block 2 anomaly 2 in the studied area compared to the surrounding laterites. These form by intensive and prolonged weathering of the underlying parent rock, usually when there are conditions of high temperatures and heavy rainfall with alternate wet and dry periods and leaching of parent rocks which leaves the more insoluble ions, predominantly iron and aluminum. There is clear distinction between brecciated zones which trends NNW-SSE direction and surrounding laterites. The NNW-SSE structure provided pathways for iron rich fluid to ascend to the surface.

Figure 2: Breciated laterite in block 2 anomaly 2 Nakaseke District.

Figure 3: Radiation readings captured at the observation points in block 2 anomaly 2 Nakaseke District.

3.3.1.2.2 Conclusions and Recommendations

The geology in block 2 anomaly 2 and 7 is underlain by quartzite, brecciated laterites quartzitic sandstone. The brecciated rock is confirmed by angular and sub angular shapes of the quartz / quartz veins inclusions with in the laterites. Block 2 anomaly 2 Nakaseke exhibits prospective values compared to block 2 anomaly 7 Kiboga.

However, anomaly 2 is a low-grade anomaly based on the recorded radiation readings and anomaly 7 does not show any grade.

It is recommended that a more detailed mineral prospecting and geological mapping be carried out in Block 2 anomaly 2 to determine the extent of brecciation and find out whether it is a localized shear zone or extends beyond the observed area.

Other geophysical methods for mineralization should also be applied for adequate characterization of the anomaly 2.

3.3.1.3 Geodata Services

i) Cleaned the minerals occurrence database and updated it with new gold occurrence data from Kassanda, Mubende, Bugiri, Busia and Namayingo base (Figure19 &20). Tha mineral database and mineral occurrence were updated.

Figure 19: Field data collection for updating mineral occurrence database

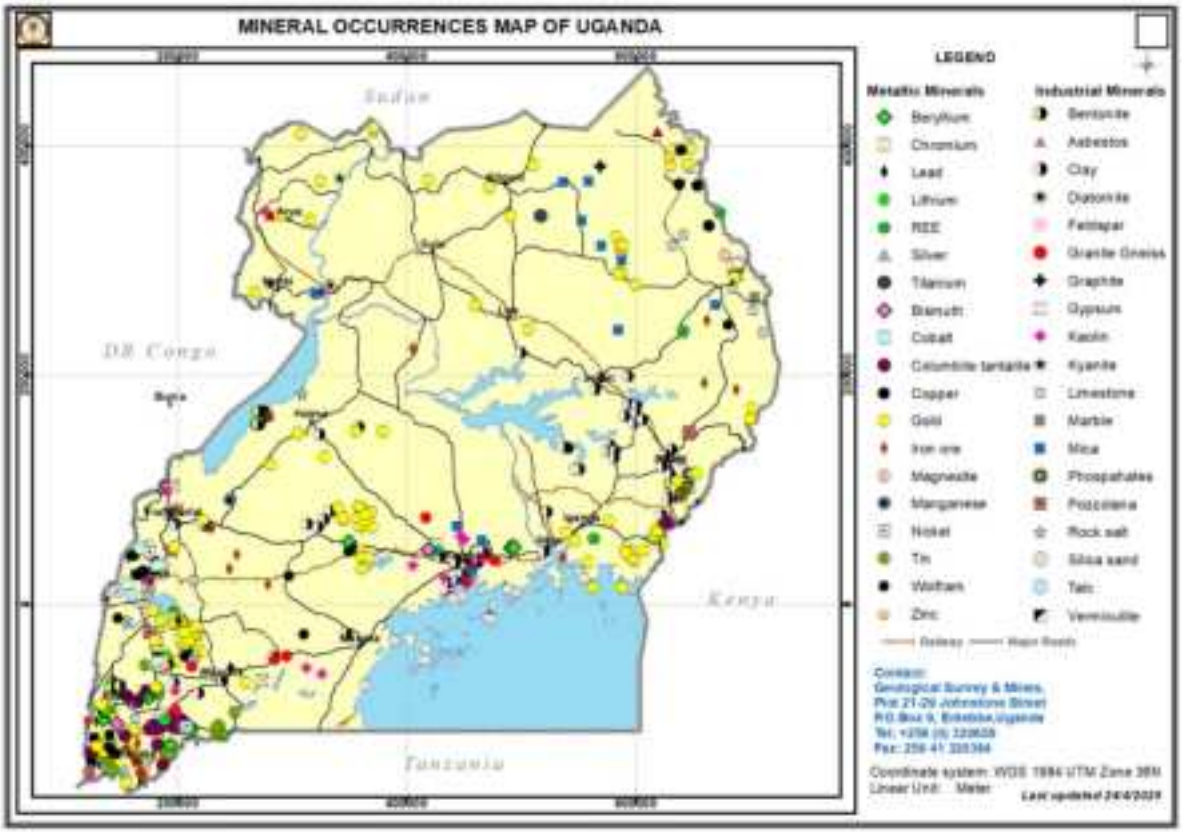


Figure 5: Updated Mineral Occurrence Map of Uganda 2025

ii) Compiled and Provided mineral sector promotion maps for Minerals in Uganda, Industrial minerals, rocks and Minerals for construction, Critical minerals, Gold, 3Ts, Battery Minerals for sector promotion during 13th Mineral Wealth Conference of 2024.

iii) Together with AC/Geology prepared promotion brocure on Minerals in Uganda for sector promotion during the china Africa cooperation summit 2024

iv) Renewed subscription to Elsevier's international Journal of applied earth sciences to aid Research &Development.

v) Continued to subscribe to the Vision Group Limited and the Monitor Publications Limited for the Hard copy daily news updates.

vi) Stocked the documentation centre with 139 new documents, i.e.19 publications received, one unpublished report from staff and 119 articles on minerals extracted from newspapers.

vii) Continued to update the website (Figure 21). 7 maps, 20 photos and 4 new articles were uploaded onto the website. Some of the items added to the

website included: The Critical mineral map of Uganda, Map for battery minerals in Uganda and Silica Sand map of Uganda.

Figure 6: Picture showing some updates on the mineral development programme website during the FY2024/25. This was during the signing MoU with the Geological Survey of Slovenia

3.3.1.4 Mineral laboratory services in support to mineral exploration

i) Analyzed seven hundred thirty four (734) samples comprising of gold nuggets, metal bars, ore, rocks, soil, granules, copper metal objects, discs, clay, gravel, granules, and police exhibits using X-ray fluorescence (XRF) spectroscopy and gravity.
ii) Conducted mineral identification tests on one hundred sixteen (116) samples comprising rocks, clays, gemstones, powders, and police exhibits using physical identification techniques, density measurement using the hydrostatic balance, and mineral quantification using the X-ray diffractometer.
iii) Carried out thin section preparation and petrographic analysis of sixty eight (68) rock samples.
iv) Undertook field sampling of a consignment of suspected minerals intercepted by the police at the Daks Warehouse in Mukono on 5th February, 2025.
v) Undertook field trip to Mutaka Kaolin Mine and processing plant and the M/s. Samta Mines and Minerals Limited tantalite pilot plant in Mitooma District and assessed the mineral beneficiation technologies being applied as well as laboratory testing needs and those in place for purposes of making available the required services to stakeholders as well as inter-laboratory comparison.
vi) Undertook field sampling of sponge iron and hot briquetted iron (HBI) at M/s. Abyssinia Iron and Steel plant in Jinja for determination of iron content on 11th November, 2024.

3.3.2 Promotion of Investment in Mineral Resources

i) Supplied Mabarara and Kabale Regional Offices with some Sector promotion materials (Geological map, Mineral Potential maps, Mining &Minerals policy 2018, Mining &Minerals Act 2022 and Mining &Minerals Regulations 2024, Figure..). Sector visibility was enhanced at the Offices.

Figure 7: Figure 21: Some of the Legal and Sector Promotion materials delivered at both Kabale and Mbarara Regional Offices

ii) Provided support to field teams (regional geochemical surveys in greater centre region, wolfram prospecting in Kisoro, Manganese prospecting in Kyenjojo, and iron ore in Hoima) with GIS skills as well as geoscientific data/information (Literature review) to inform field operations.
iii) Provided mineral sector promotion materials (mineral distribution & Geological map of Uganda) for sector promotion at the Mining Indaba 2025, Cape Town, South Africa.
iv) Provided gold occurrence data (on 24/2/2025) to a student of Busitema University for research on gold extensions in Busia gold field areas.
v) Provided mineral sector promotion maps for Gold and Copper occurrences in Uganda for engagement of investors by Office of the Vice President in response to a request sent to the PS/MEMD
vi) Met and disseminated geological and mineral sector promotion materials (Geological map, Au, Cu, Si & Ni maps) to a delegation of investors from China invited by the Hon. Minister of State for Investment on 21/2/2025.
vii) Exhibited at the 13th Mineral Wealth Conference at Serena Hotel from 1st to 2nd October 2024

Figure 8:. Exhibition at the 13th MWC at Serena Hotel

viii) Exhibited at the Renewable Energy conference 2024 and Expo, Speke Resort Munyonyo from 31st October to 2nd November 2024

Figure 9: Exhibition at the Renewable Energy Conference 2024 and Expo

ix) Together with the PS/MEMD provided Career guidance in mineral sector at Shekinah International School, Entebbe on 7th October 2024.

Figure 10: Career guidance at Shekinah International

x) Together with UCMP compiled the Mining Industry booklet which was launched and shared with participants at the Mineral wealth conference that took place from 1st to 2nd October 2024 at Serena Hotel Kampala. The book was launched by the Rt. Hon. Prime Minister of Uganda, Proscovia Nabbanja.

Figure 11: Rt. Hon PM launching Uganda's Mining Industry hand book compiled during the workshop

3.4 HEALTH AND SAFETY

3.4.1 Laboratory safety compliance

i) Upon inspection on 11th September, 2024 and 4th October, 2024 by inspectors from the Occupational Safety and Health Department of the Ministry of Gender Labour and Social Development (MGLSD), in compliance with the Occupation Safety and Health Act, Cap. 231, the Laboratory was duly registered on 10th March, 2025.
ii) Successfully concluded the procurement for insurance coverage of the Geological Survey and Mineral Laboratory in Entebbe which was reinitiated after the bid price was much higher than the estimate. M/s. Sanlam General Insurance Limited was contracted at UGX. 83,983,784.
iii) Successfully concluded the procurement for personal protective equipment and they were delivered.

3.4.2 Earthquake Monitoring and advisory services

The department continued to monitor and give advisory services on earthquakes and geotectonic events in the country. Interpretation of data collected revealed several earthquakes events (Figure 12) which occurred within the country, underscoring Uganda's vulnerability to tectonic events, because Uganda is a host to a long stretch of a portion of the East African rift system (EARS), with active tectonic/seismic activity.

As expected, most events occurred within the rift valley region, all the way from Kisoro through the Albertine region to the West Nile region but along the Nile valley. Activity was also high in the Lake Victoria region, along the Uganda-Kenya Boarder, which should due to proximity to rift valley arm in Kenya.

Occurrence of the earthquake event along the Aswa shear zone also underscores active tectonic activity within the Aswa shear zone, and because the shear zone extends into the Mt. Elgon region, tectonic activity must be responsible for the deep and extensive NW-SE trending cracks in the Mt. Elgon region, that continue to destroy property and displace people there.

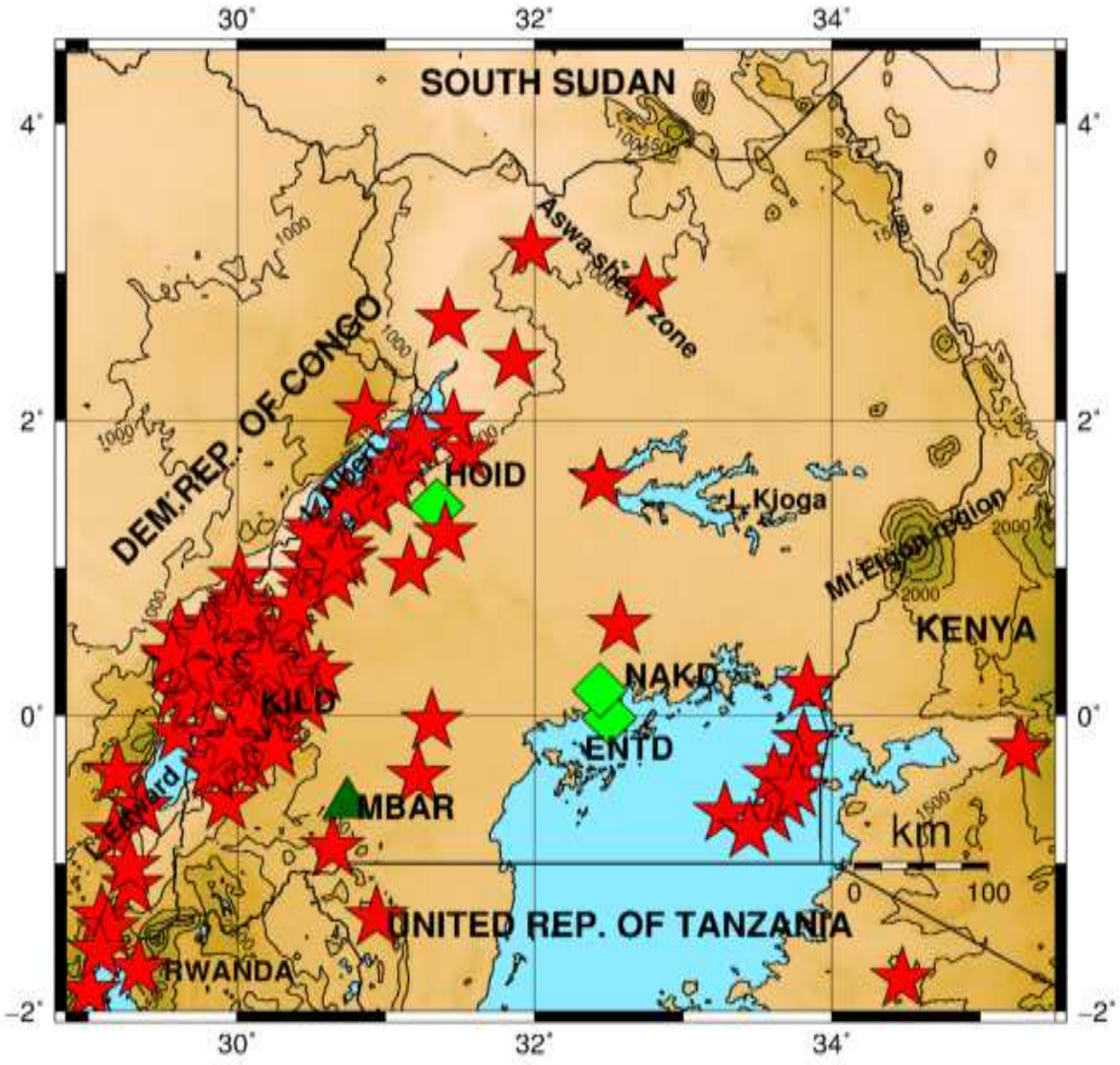


Figure 12: Seismicity of Uganda and surrounding areas. Map showing earthquake events that occurred in or close to Uganda for FY2024/25. The red stars denote the epicentres of the recorded earthquakes, light green diamonds represent the location of the seismic stations.

Since Earthquakes are a natural phenomenon and cannot be stopped, there is need for continuous sensitization of the population on how to leave with them thereby preserving life and property. Also, since the entire country a was declared a physical planning area requiring adherence to physical planning Act (e.g. having approved house plans) while constructing, there is need for ensuring that construction designs and recommendations are followed while constructing houses, roads, dams, railways and any infrastructure.

3.4.3 Assessment of geo-hazards in burango hill mbuga parish Kisoro, South Western Uganda

The objective was to conduct geotechnical and geological assessment of the widening cracks on slopes of burango hill mbuga parish (Figure 13) and map out the areas under threat and any visible signs of possible slope failures.

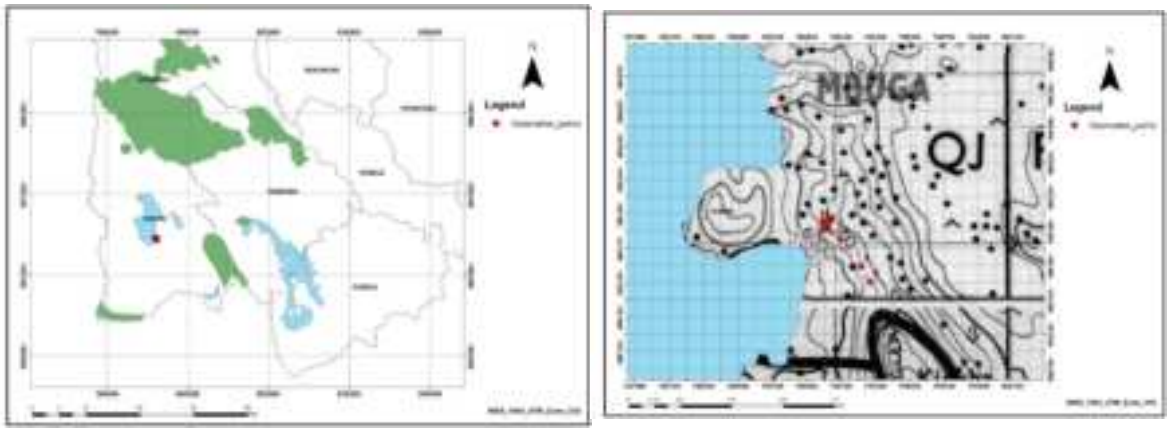


Figure 13: Shows the location & topographic maps of studied area in Kisoro

3.4.3.1 Findings

There are a number of visual signs of mass flow in the assessed areas, including: visible cracks in the ground, cracked houses, uneven and steep slopes, tilted and moved trees and rock boulders and some localized minor slope failures. All these factors are individually and collectively strong indicators of high risk of slope failure.

slope stability study test results indicated that the angle of internal friction is low in the range of 12^0 to 29^0 while the cohesion factor was found to be in the range of 6kN/m2 to 40kN/m2, which all point to the risk of slope failure and high risk of mass in the areas of Burango hill, Nyakinama sub county both in the short and long term.

The slope is steep and the ground constitutes of mainly highly weathered shales, phyllites and sandstone. The community is relatively poor and land is fragmented with each household owning a small piece of land. People

cultivate around their homesteads and majority live in semi-permanent houses (Figure 28).

Figure 14: Shows indicators of slope failure with A showing developed cracks in the ground, B showing a house destroyed by the landslide, C showing ground subsidence & D showing a house with cracks running through it.

3.4.3.2 Conclusions and recommendations

The study revealed the area to be at high risk of landslide both in the short term and long term, and that if it occurred, it would be very disastrous, since majority live in semi-permanent houses.

It is recommended that communities stop overloading the slopes through piling of stones, soils and any other materials in a given area on the slope. Adherence to The Physical Planning Act, 2010 provisions, such as making and approval of physical development plans before construction and even supervision of construction so that communities can have structures which can withstand the local environmental conditions should be observed.

3.5 COLLABORATION AND CROSS CUTTING ACTIVITIES

i) Undertook community sensitization in Mubende, Kiboga, Kyankwanzi, Kassanda), Luweero, and Nakaseke in preparation for regional geochemical survey.
ii) Participated in activities leading to signing of a MoU between Uganda and the Geological Survey of Slovenia to jointly implement an EU funded PanAfGeo+ Country window project in Uganda.
iii) Drafted Memorandum of Cooperation in Inter-laboratory Comparison and requested for cooperation in the same with the following institutions: i) African Minerals and Geosciences Center (AMGC), ii) Geological Survey of Tanzania, and iii) Mintek (of South Africa). Affirmative responses were received from the African Minerals and Geosciences Centre (AMGC), Geological Survey of Tanzania, and Mintek (of South Africa) for cooperation in inter-laboratory comparison testing as required by ISO/IEC 17025:2017 and provided to Mintek the commodities and test methods for inter-laboratory comparison testing.
iv) Participated in meetings of the Joint Technical Committee (JTC) and of the Steering Committee (SC) for the Natural Gas Transmission Pipeline from Tanzania to Uganda project and for the Refined Petroleum Products Pipeline from Tanzania to Uganda as well, in Dar es salaam, Tanzania, from 24th to 26th February, 2025. At the meeting, the Evaluation Report for procuring a consultant to conduct a detailed feasibility study for the Natural Gas Transmission pipeline was approved.
v) Attended Meetings of the East African Community Sectoral Council on Energy, Petroleum and Mining in Arusha, Tanzania, from 10th to 14th February, 2025. It was the inaugural meeting of the Mining Working Group given that the mandate of the Sectoral Council had only just been expanded following the 45th Meeting of the Council of Ministers to include Mining.
vi) on 14th November, 2024 attended a meeting of the Joint Technical Committee (JTC) for the Development of a Natural Gas Transmission Pipeline from Tanzania to Uganda where the evaluation report for procurement of a consultant to undertake the feasibility study was approved. The JTC meeting discussed modalities of implementing the

feasibility study for the refined products pipeline project from Tanzania to Uganda as well.

vii) As part of the Ministry of Energy and Mineral Development Technical Committee for the Redevelopment of Kilembe Mines as well as the Operationalization Team of the Uganda National Mining Company (UNMC), Mr. Chris Lubangakene attended the formal handover of assets of Kilembe Mines Limited to UNMC and UNMC handover of the assets for the Mining operations in accordance to the Mineral Production Sharing Agreement signed on 3rd March, 2025 to M/s. Sarrai Group Limited, on 17th April, 2025, at Amber House, in Kampala.

viii) As part of the Technical Committee for the Kilembe Redevelopment Project, Mr. Chris Lubangakene attended both the formal handover of assets of Kilembe Mines to the licensee who comprise of Sarrai Group Limited, Nile Fibreboard Limited, and the Uganda National Mining Company Limited Uganda on 17th April, 2025 at Amber House in Kampala by the Hon. Phionah Nyamutoro, Minister of State for Mineral Development, and as well as the physical handover on 9th May, 2025 at Kilembe Mines in Kasese District by the Hon. Dr. Canon Ruth Nankabirwa Ssentamu, Minister of Energy and Mineral Development.

ix) As part of the negotiation team with the best evaluated bidder (BEB) for the redevelopment of Kilembe Mines through a Mineral Production Sharing Agreement (MPSA), Mr. Chris Lubangakene, Assistant Commissioner Laboratory and the team successfully concluded negotiations. The MPSA was then subsequently signed upon approval by the Solicitor General on Monday, 3rd March, 2025 by the Hon. Dr. Canon Ruth Nankabirwa Ssentamu, Minister of Energy and Mineral Development and witnessed by the Hon. Matia Kasaijja, Minister of Finance Planning and Economic Development, and on the part of the Licensee was Sarrai Group Limited, Nile Fibreboard Limited, and the Uganda National Mining Company Limited.

x) Mr. Chris Lubangakene, Assistant Commissioner Laboratory participated in preparatory meetings and negotiations with the best evaluated bidder for the redevelopment of Kilembe Mines from 30th October, 2024.

xi) Mr. Chris Lubangakene, Assistant Commissioner Laboratory accompanied the Honourable Minister of Energy and Mineral Development, Dr. Canon Ruth Nankabirwa Ssentamu to the 4th Future Minerals Forum (FMF) from 14th to 16th January, 2025, in Riyadh, Saudi Arabia where she participated in the FMF Ministerial Roundtable, the Africa Leadership Roundtable on “Traceability and Responsible Supply of Minerals in Africa”, and the 1st Anniversary Celebration of the Africa Minerals Strategy Group. The Honourable Minister

championed Mineral Value Addition and a Just Energy Transition at the FMF.

3.5.1 Gender workshop

Participated in the gender mainstreaming training sessions for both women and men in Leadership in the MEMD held between October 21st and 24th 2024 which were Organised By GIZ at Munyonyo Speke Resort Hotel, Kampala.

4 Projects in the Departments

During the FY2024/25, GSD had two (2) running funded projects:

i) **Airborne Geophysical Survey of Karamoja Project** Completed the geological, geochemical and geophysical data collection in Karamoja region, parts of Mt. Elgon areas and Lamwo District. The project was a great success. The results of the project and official hand over of the project outputs were to be presented later in the FY2025/26. However, what is clear that the geophysical survey (total magnetics and radiometrics) of Uganda stands at 100% complete, as of now. The project exited on 30/6/2025.

ii) **Support to Uganda's Mineral-based Industrialization Project (SUMIP)** came on board on 1/7/2024. The project is supporting mineral exploration, to not only have a general overview of the mineral potential of Uganda but more so, reduce the exploration risk, attract investment in the sector, create jobs and wealth in the people of Uganda. As at close of the FY202425 the project had accomplished the following:

a) Sensitisation to create awareness in the population and pave way for National Geochemical Survey in Kyankwazi, Kiboga, Kassanda, Mubende, Mityana Nakaseke, Luwero and Nakasongola for geochemical survey.

b) Undertook regional geochemical survey in topographic maps sheets 59/1, 59/2, 59/4, 60/1 and 60/2, covering Kyankwanzi, Kiboga, Mubende, Mityana, Nakaseke, Luwero, and Nakasongora. During the survey, 566 stream sediment/Alluvial, 47 duplicates, 44 soil and 19 rock samples were collected.

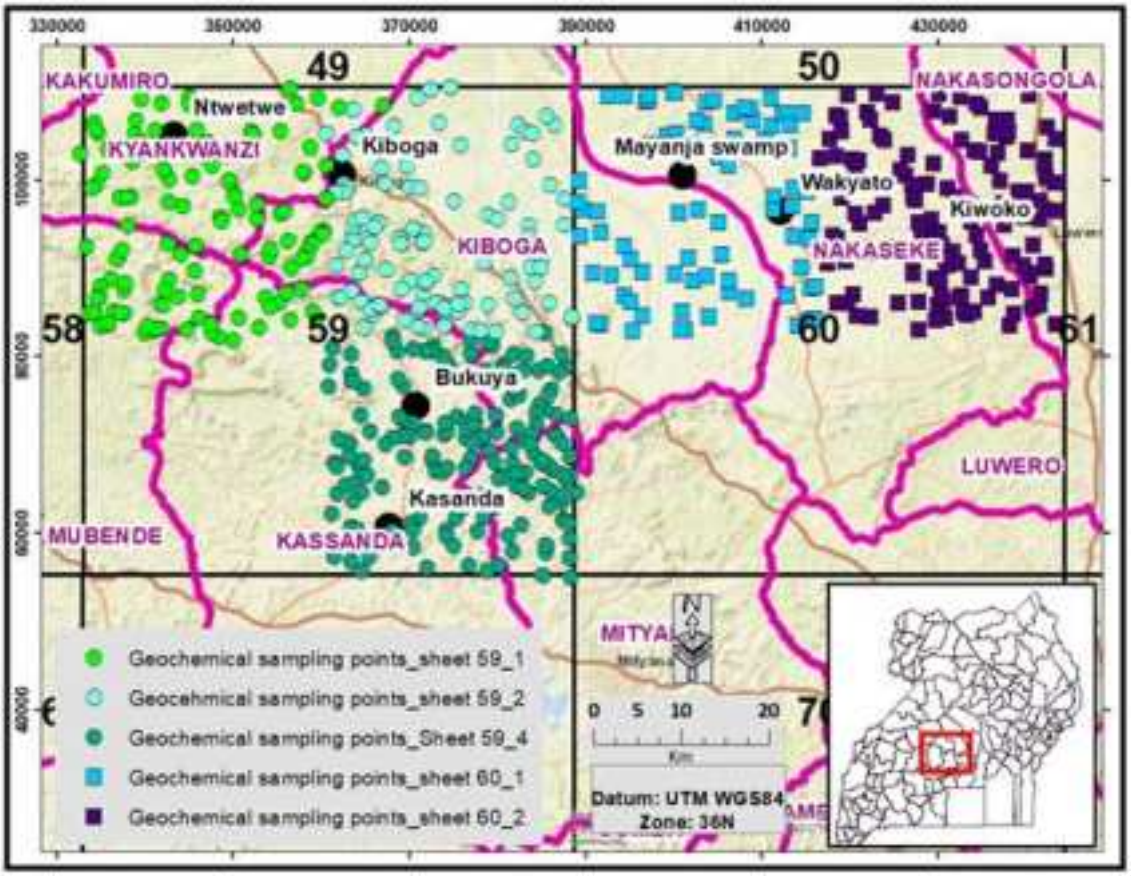


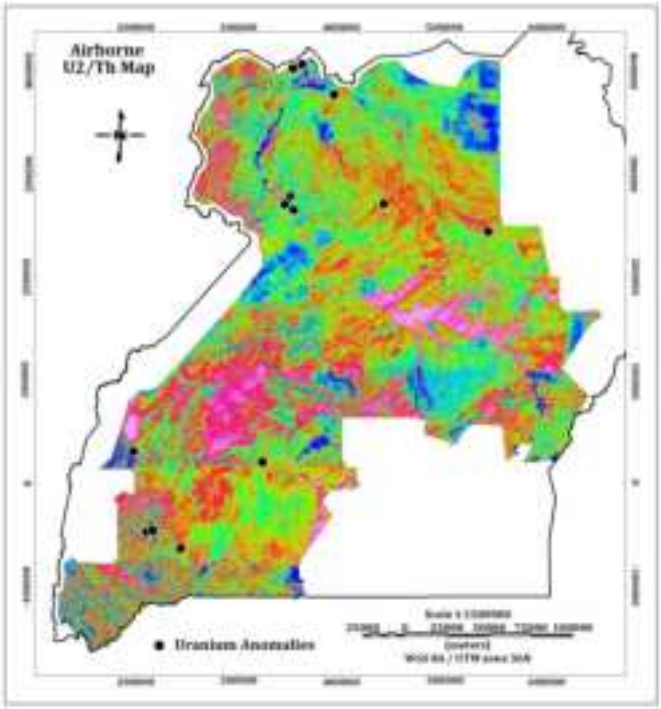
Figure 15: Regional geochemical Survey of sheet 59/1, 59/2, 59/4 , 60/1 and 60/2

c) **Detailed geological mapping in Katara uranium anomaly**

A total of 30 representative rock samples were collected from various locations on mineralized outcrops across the entire prospect area. Field evidence—particularly the high-grade readings (Figure 16) from the trench strongly indicates the presence of significant uranium mineralization. Further recommendations will be given after the samples have been analysed.

Figure 16: Measuring radiation in water, sediments and shear in Katara

d) **Reconnaissance survey of uranium** anomalies was undertaken as recommended by the IAEA experts to collect data to enable ranking of the anomalies to inform further exploration decisions.



Reconnaissance of 16 uranium anomalies were followed up (Figure 17), recorded geological observations and all these will be used in ranking of uranium anomalies for followup. The team will further study the anomalies using mineral systems to identify the pathways and areas with conditions conducive for uranium deposition.

Figure 17: Anomalies overlain on a (eU)2 to Th ratio map.

e) **Lwensakara Uranium Sample analysis and data interpretation:** Prepared and analysed two hundred and twenty four (224) samples from pitting and and trenching in Lwensakala uranium prospect Sembabule. The samples were analysed for uranium and other elements. Values for Uranium increase with depth from soil to saprolite to a maximum 360ppm in LWSPIT2. The pits show uranium increasing with depth.

f) **Nyaituuma-Buraru iron ore prospecting in Hoima District**. Gravity and magnetics methods were deployed, respectively covering a total of 45 line km and63 line km. The Iron ore was found to be ferruginised mudstones and the mineralization is structurally controlled by a shear zone.

g) **Detailed Geological Mapping Of Iron Ore At Mugabuzi, Sembabule.** The primary objective was to evaluate the economic potential of the prospect through systematic geological mapping and field assessment.

This was integrated with recent geophysical data—including magnetic, Airborne Spectral Analysis (ASA), Controlled-Source Electromagnetic (CET), and gravity surveys. Two distinct forms of iron ore mineralization based on textural and structural settings i.e.: **Massive iron ore bodies**, and **Shear zone-hosted mineralization** were identified. The mineralization, is predominantly composed of magnetite and hematite (Figure 17).

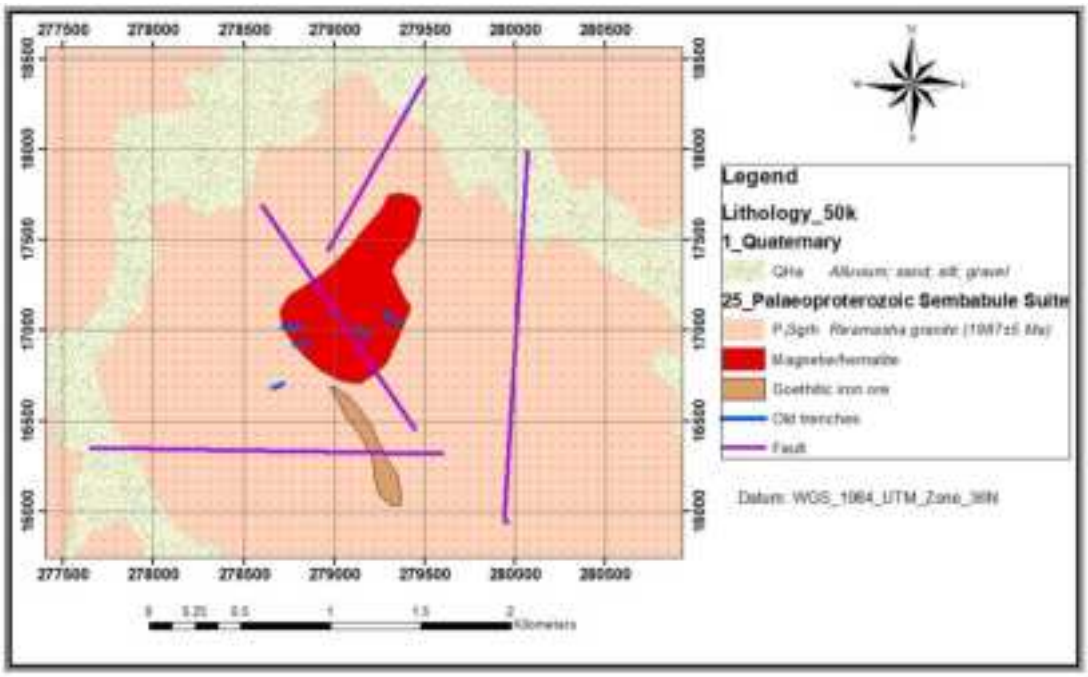


Figure 17: Geology of Mugabuzi in relation to iron ore

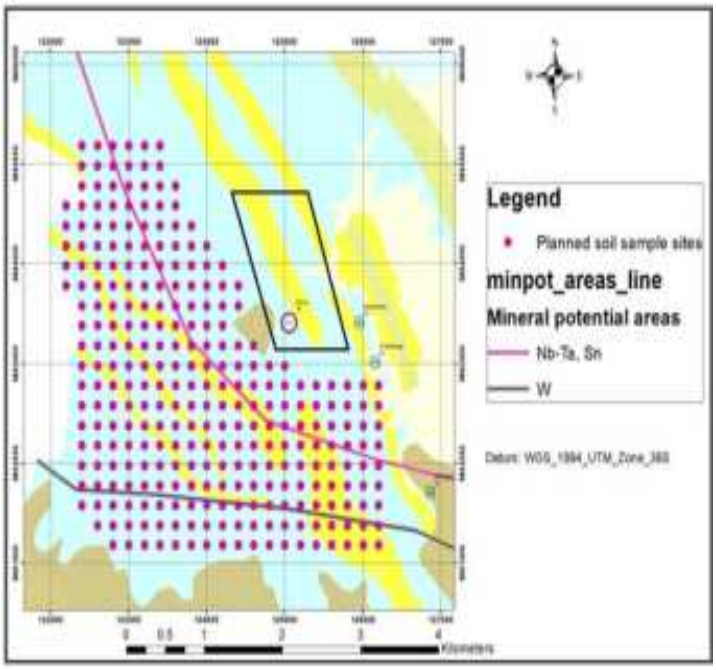
h) **Reconnaissance for Manganese In Isandra Village, Kyenjojo District**

Manganese is one of the critical battery minerals and one of the priority minerals being explored under the project. The previous studies recommended ground geophysics to generate anomalies for trenching.

A reconnaissance survey of the prospect, prospecting for manganese ore and locating previous artisanal workings to identify zones of manganese mineralisation and collect data to produce base map for ground geophysical survey was undertaken. Nine locations with manganese mineralization were identified, and twelve (12) samples which are being prepared for analysis to determine concentration of the manganese and associated minerals in the ore were collected.

i) **Wolfram Exploration in Kirwa**

Discovered in 1943, Kirwa wolfram mine operated till 1980 when the mine is said to have stopped production due to wars. Over 60 tons of wolfram is reported to have been mined over the time. Due to its historical importance, Government has prioritized its redevelopment as part of a broader strategy to advance the mineral sector. A reconnaissance field programme aimed at evaluating the potential for expanding wolfram resources for future mining operations was undertaken.



Soil geochemical survey (Figure 18) was conducted at a 200m to identify potential mineralization. During the survey a total of 156 soil samples were collected. The team also conducted geological mapping and 34 samples being collected. Once analysed, these surveys will aid decision making on the way forward

Figure 18: Planned soil

j) **Prospecting For Pegmatite Minerals In Ntungamo District**

Pegmatites concentrate rare and valuable minerals in economically viable quantities. The objective of the undertaken activity was to map pegmatites (Figure) , analyse pegmatite rock samples, generate a map showing extent and trend of the pegmatites area and prospect for pegmatite minerals including: Lithium, Tantalum, Niobium, Berylium, tin, REE and Gemestone. Samples collected were analysed using X-Ray Diffraction (XRD) technique to obtain the weight fractions of the different compounds. Results revealed presence of Lithium and Berryllium as in Table 1below:

Table 1: X-Ray Diffraction (XRD) analysis for pegmatite samples

QT/01	UTM 36M 189131E, -109864N	16.82% of sample by weight fraction was analyzed to be Goethite, an iron oxide mineral. The 1.99% Lepidolite weight fraction of the sample indicates trace amounts of Lithium in the sample.
KN/01	UTM 36M 176624E, -107744N just a few meters (about 30m) to the Kakanena Mine Site.	is 4.2% Beryl [$Be_3Al_2Si_6O_{18}$], 5.4% Lizardite [$Mg_3(Si_2O_5)$ $(OH)_4$], 28.7% Polylithionite [$KLi_2AlSi_4O_{10}F_2$], and 2.18% Clinosafflorite [Co,Fe,Ni)As_2 it is evident that the pegmatite is rich in Beryllium and Lithium
PB/KG/02	UTM 36M 183807E,-100232N	The pegmatite sample was found to be rich in quartz, muscovite and schorl tourmaline. The 2.9% Nalipoite [NaLi2PO4] composition in the sample by weight fraction indicates presence of Lithium.
PB/KG/01	UTM 36M 183937E,-99849N	The pegmatite at outcrop at Kigarama and is to be about 8m thick and analyzed using the XRD technique. From the analysis results, the sample collected mainly contained quartz, muscovite and schorl tourmaline. Though very trace by weight fraction of the sample, Fluor-elbaite

		Na(Li1.5Al1.5)Al6(Si6O18)(BO3)3(OH)3F indicates presence of Lithium.
PB/01	UTM 36M 188421E,-100663N	The pegmatite Sample PB01 was analyzed using the XRD technique and was found to contain 3.05% of its weight fraction as Beryl [Be3Al2Si6O18].

However, more detailed exploration and analysis are required to assess whether these minerals in the study areas occur in economic quantities and grade.

5 CHALLENGES AND RECOMMENDATIONS

5.1 CHALLENGES

i) Challenges in procurement (Delays, failure, and reinitiating for a procurement) delay service delivery.
ii) Limited staff increase word load to available few staff and slows service delivery.
iii) Financial resources allocated to the GSD are not adequate to equip the institution and also undertake planned activities
iv) Leaking roof e.g. petrology laboratory need maintenance

5.2 RECOMMENDATIONS

i) Increase financial resources allocation to the
ii) Framework contracts for office consumables faster approvals and execution of procurements initiated
iii) Recruit Officers into the vacant public service positions as well as contract staff especially for support staffer (Office attendants, laboratory attendants)

6 APPENDICES

6.1 SUMMARY OF FIELD OBSERVATIONS FOR BUKUSU IRON ORE PROSPECTS

Prospect	Obs. Point	Sample ID	UTM Easting	UTM Northing	Altitude (m)	Description
Nangalwe	Stop 01	**NANG/001**	0641610	0098422	1301	Boulders of magnetite (0.3x0.4)m on a gentle slope. Fine-grained, ~90%

						iron ore, highly magnetic.
	Stop 02		0641598	0098526	1294	A lot of iron ore boulders and cobbles piled from a compound. Looks like the boundary.
	Stop 03	**NANG/002**	0641564	0098564	1288	Boulders and cobbles of magnetite piled from a home compound.
	Stop 04		0641497	0098610	1292	Cobbles and gravels around a 3m SINO pit ended on massive iron ore.
	Stop 05		0641407	0098611	1296	Few boulders within lots of cobbles and gravels on a quarry face.
	Stop 06		0641413	0098702	1279	Sporadic boulders within lots of cobbles and gravels at the foot-hill.
	Stop 07		0641304	0098701	1280	Cobbles and gravels along walls of a 50ft SINO pit ended in vermiculite flakes.
	Stop 08		0641247	0098703	1274	Few boulders within cobbles and gravels on a gentle slope in coffee/banana plantation.
	Stop 09		0641142	0098639	1282	Few boulders within cobbles and gravels in eucalyptus plantation.
	Stop 10		0641096	0098537	1282	Cobbles and gravels on a relatively gentle slope.
	Stop 11		0641078	0098480	1274	Few boulders within cobbles and gravels on a relatively gentle slope.

	Stop 12		0641100	0098390	1289	Sporadic boulders and cobbles on a gentle slope of Nangalwe hill.
	Stop 13	**NANG/003**	0641130	0098374	1276	Sporadic big moderately weathered boulders (0.4x0.5)m within few cobbles and gravels.
	Stop 14		0641253	0098315	1288	Sporadic boulders and cobbles below Catholic church. Seemingly end / boundary of iron ore.
	Stop 15	**NANG/004**	0641345	0098468	1331	Lots of mod. weathered in-situ boulders (0.5x0.6)m covering ~(80x200)m on the hill peak.
	Stop 16	**NANG/005**	0641463	0098435	1319	Lots of mod. weathered in-situ boulders (0.5x0.6)m exposed in a murram quarry above Nangalwe P/S.
	Stop 17		0641541	0098338	1302	Sporadic boulders and cobbles above Nangalwe Subcounty Headquarters.
Sikusi	Stop 18		0639900	0098295	1249	A lot of cobbles and gravels exposed along the road and surrounding gardens.
	Stop 19		0639784	0098244	1242	A lot of cobbles and gravels exposed along a house compound.
	Stop 20		0639700	0098139	1243	A lot of cobbles and gravels exposed within a maize and beans garden.
	Stop 21		0639666	0098054	1242	Cobbles and gravels within

						weathered phosphate / carbonatite rock.
	Stop 22		0639667	0097977	1241	A lot of cobbles and gravels exposed within a cassava and beans garden.
	Stop 23		0639798	0097946	1244	A lot of cobbles and gravels exposed along a home compound.
	Stop 24	**SIKU/01**	0639934	0098019	1245	A lot of cobbles and gravels exposed along a foot path and surrounding gardens.
	Stop 25		0639852	0098133	1261	Lots of cobbles and gravels around a pit latrine that exposed flakes of vermiculite.
	Stop 26	**SIKU/02**	0639990	0098205	1252	A lot of cobbles and gravels exposed within a home compound.
Sirumbusa	Stop 27		0640265	0099833	1295	A lot of cobbles and gravels exposed along the road in eucalyptus garden on hill top.
	Stop 28	**SIRU/01**	0640280	0100040	1278	A lot of cobbles and gravels exposed along a homestead compound.
	Stop 29		0640262	0100115	1271	A lot of cobbles and gravels exposed along a foot path.
	Stop 30		0640144	0100106	1277	A lot of cobbles and gravels exposed within a beans garden.
	Stop 31		0640028	0100048	1276	A lot of cobbles and gravels exposed within eucalyptus and beans plantation.
	Stop 32		0639966	0099927	1266	A lot of cobbles and gravels

						exposed within a maize garden.
	Stop 33		0639957	0099811	1272	A lot of cobbles and gravels exposed along a foot path and surrounding gardens.
	Stop 34		0640000	0099635	1264	Lots of cobbles and gravels exposed within an empty garden.
	Stop 35		0640100	0099590	1258	A lot of cobbles and gravels exposed along a footpath.
	Stop 36		0640211	0099592	1260	A lot of cobbles and gravels exposed within a sweet potato garden.
	Stop 37		0640437	0099604	1253	Lots of cobbles and gravels exposed within a quarry mined for marram.
	Stop 38		0640605	0099885	1252	Low-lying massive laterite outcrops with angular cobbles of magnetite, probably indicating a breccia.
	Stop 39	**SIRU/02**	0640307	0099864	1280	In-situ boulders of mod. to highly weathered magnetite in a 3m deep quarry. Thin lenses of vermiculite exposed.
	Stop 40	**SIRU/03**	0640203	0099851	1298	In-situ boulders of mod. to highly weathered residual magnetite in a 3m deep quarry. Thin lenses of vermiculite exposed.
Khabutola	Stop 41	**KHAB/01**	0640962	0100062	1274	A lot of cobbles and gravels exposed along the

						road and in a quarry behind Khabutola P/S.
	Stop 42		0640847	0099960	1257	A lot of cobbles and gravels exposed along the compound of Khabutola Seed School.
	Stop 43		0640872	0099885	1253	A lot of cobbles and gravels exposed along the sides of Khabutola Seed School.
	Stop 44	**KHAB/02**	0640937	0099871	1277	In-situ cobbles of mod. to highly weathered magnetite in a 3m deep quarry. Thin lenses of vermiculite exposed.
	Stop 45		0641036	0099821	1253	A lot of cobbles and gravels exposed along a footpath.
	Stop 46		0641191	0099899	1255	A lot of cobbles and gravels exposed within a maize garden.
	Stop 47		0641148	0100022	1268	Low-lying massive laterite outcrops with angular cobbles of magnetite, probably indicating a breccia.
Nakhupa	Stop 48		0639137	0095593	1260	A lot of cobbles and gravels exposed along the football pitch of Bugobero S.S.
	Stop 49		0639107	0095518	1252	A lot of cobbles and gravels exposed in a new garden.
	Stop 50		0638979	0095207	1241	A lot of cobbles and gravels exposed in a homestead compound.
	Stop 51	**NAKH/01**	0638912	0095055	1228	In-situ boulders, cobbles and

						gravels of weathered magnetite exposed in a wide shallow quarry (2.5m deep).
	Stop 52		0638980	0094985	1232	A lot of cobbles and gravels exposed along a footpath and surrounding gardens.
	Stop 53	**NAKH/02**	0638933	0094896	1220	Moderately weathered insitu boulders and cobbles exposed along a footpath covering a (1x3)m area.
	Stop 54		0638813	0095013	1225	A lot of cobbles and gravels exposed along a footpath and surrounding gardens.
	Stop 55		0638902	0095291	1238	A lot of cobbles and gravels exposed along a footpath and surrounding gardens.
	Stop 56	**NAKH/03**	0638908	0095366	1240	Few mod. weathered boulders in cobbles and a lot of gravels exposed in a shallow quarry.
	Stop 57		0638938	0095532	1253	Cobbles and gravels exposed from a pit dug within a homestead compound.
	Stop 58		0638904	0095598	1250	A lot of cobbles and gravels exposed along a footpath and surrounding gardens.
	Stop 59		0638832	0095714	1246	A lot of cobbles and gravels exposed along a footpath and

						surrounding gardens.
	Stop 60		0638817	0095912	1247	A lot of cobbles and gravels exposed along a road and surrounding gardens.
	Stop 61	**NAKH/04**	0638938	0095984	1260	Cobbles and gravels exposed near a homestead.
	Stop 62		0638996	0096117	1262	A lot of cobbles and gravels exposed within a homestead compound.
	Stop 63		0639121	0095932	1262	A lot of cobbles and gravels exposed within a homestead compound