



MINISTRY OF ENERGY AND MINERAL DEVELOPMENT



DIRECTORATE OF GEOLOGICAL SURVEYS AND MINES P.O. Box 9, ENTEBBE



PERFORMANCE REPORT FOR FY 2019/20

AUGUST, 2020

TABLE OF CONTENTS

<i>Table of Contents</i>	<i>i</i>
<i>List of Figures</i>	<i>ii</i>
<i>List of Tables</i>	<i>iii</i>
<i>DGSM Top management</i>	<i>iv</i>
<i>Acronyms</i>	<i>v</i>
<i>Executive Summary</i>	<i>1</i>
<i>1 Introduction</i>	<i>5</i>
<i>2 Insitutional framework</i>	<i>5</i>
<i>3 Performance of the directorate</i>	<i>5</i>
<i>3.1 Geological Survey Department</i>	<i>5</i>
<i>3.2 Mines Department</i>	<i>15</i>
<i>3.3 Geothermal Resources Department</i>	<i>22</i>
<i>4 Projects during FY2019/20</i>	<i>28</i>
<i>5 Challenges and Recommendations</i>	<i>29</i>
<i>5.1 Challenges</i>	<i>29</i>
<i>5.2 Recommendations</i>	<i>30</i>
<i>6 Appendices</i>	<i>31</i>
<i>6.1 Laboratories Equipping and Systems Development updates</i>	<i>31</i>
<i>6.2 Staff Promotions</i>	<i>34</i>
<i>6.3 Seismicity of Uganda and the surrounding region during the period June 2019 – June 2020</i>	<i>35</i>

6.4 geothermal potential map OF uganda - Geothermal Manifestations overlain on geology..... 37

LIST OF FIGURES

Figure 1: institutional capacity development at DGMS Mineral Laboratories. Above-newly installed large sample drying oven (left) and Benchtop oven (right) in the Mineral Dressing Laboratory at DGSM in Entebbe, Middle - Newly remodelled and refurbished laboratory..... 7

Figure 2: Peat (green points) Potential in Uganda. Huge potential around Lake Kyoga, Central and Western Regions of the country..... 10

Figure 3: Seismicity of Uganda during the Period July 2019 - June 2020. The BLACK star represents (4.0 – 4.5), YELLOW star for (4.6 - 5.0) and RED star (5.1 - 5.5) magnitude range on Richter tor scale. The GREEN diamonds represent broadband seismic stations (ENTD, NAKD, KILD, HOID) while the BLUE hexagon represents the global seismic station MBAR..... 11

Figure 7: Uganda Infrasond Network (5 stations in Yellow triangles on map) and Entebbe Infrasond Station (under construction). 12

Figure 4: Cobalt and Nickel rich Kilembe Mines tailings stockpile was eroded and driven downstream (Lake George) by the floods 12

Figure 5: Geohazards in Bundibugyo District. Note the damages caused by ground cracking, subsidence and land slides..... 14

Figure 6: Floods in Kagadi, A house (Top) reclaimed from the flood by pouring marram around it, and Flooded coaco garden (Bottom) 14

Figure 8: Temperature measurement at Ihimbo geothermal area newly recruited staff in GRD..... 23

Figure 9: Geological and hydrothermal observations at Kibiro by internee students and graduates 24

Figure 10: The team at Kitagata hot springs in Sheema District. 25

Figure 11: Geothermal Resources awareness Exhibition during the Energy and Mineral Week 2019 at Lugogo in Kampala. 27

LIST OF TABLES

Table 1: Licensing status as at 30/06/2020..... 16

Table 2: Mineral production of FY2019/2020 Verses 2018/2019 16

Table 3: Mineral exports in FY2019/20 compared to FY2018/19 17

Table 4: Non-Tax-Revenue (NTR) for FY2019/20 compared with FY 2018/19..... 18

DGSM TOP MANAGEMENT



AG. DIRECTOR/ DGSM



AG. COMMISSIONER/GSD



COMMISSIONER/MD



COMMISSIONER/GRD

ACRONYMS

AAS	Atomic Absorptions Spectrophotometer
ACP	African Caribbean Pacific
AGR	African Gold Refinery
ASM	Artisanal and Small-scale Miners
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe (BGR)
DCIUNIN	Design, Construction and Installation of Uganda National Infrasond Network
DGSM	Directorate of Geological Survey and Mines
DoP	Directorate of Petroleum
EAGER	East African Geothermal Energy Resource
ERA	Energy Regulation Authority
EU	European Union
GRD	Geothermal Resources Department
GSD	Geological Survey Department
ICGLR	International Conference of the Great Lakes Region
IDEP	International Development and Economic Planning for Africa
ICGLR	international Conference on Great Lakes Region
ICT	Information Communication Technology
IT	Information Technology
Ltd	Limited
MD	Mines Department
MDA	Ministry Department Agency
MFPED,	Ministry of Finance Planning and Economic Development
MLA,	Minerals Liberation Analysis
MOU	Memorandum of Understanding
MW	Mega Watts
MWAMID	Mineral Wealth and Mineral Infrastructure Development

NEMA	National Environment Management Authority
NFA	National Forestry Authority
REE	Rare Earth Elements
RINR	Regional Initiative on Fight against the illegal exploitation of Natural Resources
SMMRP	Sustainable Management of Mineral Resources Project
TGH	Temperature Gradient Hole
TOR	Terms of Reference
UETCL	Uganda Electricity Transmission Company Limited
UK	United Kingdom
UGRD	Uganda Geothermal Resource Development
UNDP	United Nations Development Program
UWA	Uganda Wildlife Authority
XRF	X-ray Fluorescence

EXECUTIVE SUMMARY

The Directorate of Geological Survey and Mines is mandated **to Establish, Promote the Development, and Strategically Manage and Safeguard the Rational and Sustainable Exploitation and Utilization of Mineral Resources for Social and Economic Development.**

Medium term Key priorities that the Directorate continues to implement are:

- (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 building to harness optimal benefits from the mineral resources;*
- (iii) *Promoting and monitoring mineral resources exploration and development in order to contribute significantly to socioeconomic development of Uganda; and*
- (iv) *Promoting Health and Safety in the mining industry, and the people of Uganda through geohazards mapping, monitoring and advisory services.*
- (v) *Promoting Regional and International cooperation for research and development of the mining industry*

PROGRESS ON LEGAL AND REGULATORY FRAMEWORK

The Mining and Minerals Bill 2020: By the end of the year, the Bill was with the First Parliamentary Council for Final drafting of the Bill. This followed reviews, stakeholder consultations and incorporation of stakeholders' concerns in the draft bill.

Geothermal Policy: Review of the draft Geothermal Policy, Cabinet Memorandum and Regulatory Impact Assessment was done. The draft documents are ready for validation in an Inter-Ministerial Workshop before they are presented to the Ministry Top Management for transmission to Cabinet.

ICGLR Regulations 2019: Regulations for Prevention of Illegal Exploitation and Illicit Trade in Designated Minerals for Uganda were formulated. Review is still ongoing under guidance of Ministry of Foreign Affairs and the Office of the Solicitor General for final drafting and signing off by Minister of Foreign Affairs.

Mineral Based Industrialization Program: was formulated and incorporated in the NDP III.

PROGRESS ON INSTITUTIONAL AND HUMAN RESOURCE CAPACITY BUILDING

Infrastructure Capacity: Included Rewiring of the entire DGSM buildings in Entebbe, Equipping of the Mineral Laboratories, construction of Mineral Beneficiation Centres in Ntungamo (50%) and Fort Portal (30%) and Infrasound station at DGSM. Others included purchase and installation of specialized and officer equipments for DGSM, and due diligence for purchase of land for Base Camps at Kibiro and Panyimur to support exploration activities was initiated and is still ongoing.

Human Resources Capacity: Two officers completed their MSc degrees in Analytical Chemistry and Mining engineering from the UK, five (5) Officers continue with their MSc degrees in the UK, Malaysia, South Korea and Japan. Five other Officers continue with MSc degrees locally in Uganda as they work.

Inhouse coaching, mentoring, workshops, training of internship graduates and students, and induction of new staff was undertaken. Three (3) Officers Also, completed a three (3) months hands on training in geothermal drilling, well site geology and Reservoir Engineering in Kenya.

PROGRESS ON PROMOTING AND MONITORING MINERAL RESOURCES EXPLORATION AND DEVELOPMENT

Mineral exploration: investigations of REE at Bukusu in Manafwa, geodata integration for iron ore in SW Uganda and follow up of Uranium prospects in Sembabule revealed: an anomaly for further investigation for REE mineralization, ten (10) sites for iron ore drilling, and that Uranium mineralization is clearly controlled by dykes at Ntuusi.

Mineral Sector Promotion: In addition to daily sector promotion through geodata dissemination at DGSM, website and geodata portals, the sector was promoted at five (5) local workshops/conferences in Uganda: JSR, mineral wealth 2019, URA Taxpayers week 2019, Energy and mineral week 2019 and Rwenzori expo 2020. Internationally, the sector was promoted at the Tanzania- Uganda Joint Permanent Commission meeting, in Dar-es-Salaam, Tanzania. Cooperation on mineral development between the two countries was initiated.

Strategies for promotion: Strategies for Mineral Sector promotion of battery manufacture, dimension stones and ceramics were developed. Also drafting of a Communication strategy for the entire mineral sector to further guide sector promotion commenced.

Licensing status: As at 30/06/2020, the number of running/active licences was 713 representing a 5.6% improvement in FY2019/20 compared to FY 2018/19, attributed to e-government licensing system which was established during the FY2018/19.

Production: Production dropped by 25.6% in 2019/20 compared to that of 2018/2019. This is attributed to ban on export of unprocessed minerals.

Exports: Mineral exports dropped by 52. % in FY2019/20 compared to that in FY2018/19. The only exports made were between July and December, 2019 for only four (4) Mining Companies led by Ki3R Minerals Limited which argued their case in Parliament and were allowed to export. However, URA later reinstated the ban.

Imports: There were no mineral exports recorded during the FY2019/20.

Non-Tax Revenue (NTR): NTR dropped by 21.8% in FY2019/20 compared to that of FY2018/19. This is attributed to ban on export of unprocessed minerals which is one of the local factors affecting exploration, mining and export activities.

The main contributor to NTR is **ROYALTIES** from Mining and Mineral Dealers Licences. Royalties account for more than 50% of all the NTR. The contribution of **ROYALTIES** to NTR in FY2019/20 and FY2018/19 was about 68% and 52% respectively. Ban on export of minerals decreases mining and mineral export activities and hence decrease in royalties and NTR. Ban on export of unprocessed minerals should be lifted.

PROGRESS ON PROMOTING HEALTH AND SAFETY IN THE MINING INDUSTRY

To ensure health and safety the mining industry and Ugandan society at large, assessment of geohazards in Bundibugyo, Kilembe and Kagadi, environmental concerns at Kibiro, promotion of Equal opportunities and gender issues in mining as well as Earthquake monitoring and advisory services were undertaken.

Bundibugyo geohazards: were found to be subsidence, landslides and flooding, and not related to tectonic activity as earlier thought. Human activity, unconsolidated geologic formation and heavy rains received in the are responsible for the geohazards.

Kagadi Lake formation claims: Flooding due to accumulation of water over impervious geological formation, a granite underneath was observed.

Kibiro Environmental issues: environmental problems during the drilling of at Kibiro was jointly investigated with NEMA. As way forward NEMA advised to stop drilling activities at Kibiro and Panyimur until a comprehensive ESIA is done both sites, compensate affected people for losses and clean-up of the affected site. Recommendations are being implemented.

Earth quake monitoring: The National Seismic Network was maintained and operated. Twenty-three (23) earthquake events of which four (4) originated in Uganda i.e. Ntoroko, Kasese, Rubirizi and Ntungamo, were recorded. The Earthquake events were Light – Moderate, and therefore felt, but caused minor damage.

Kilembe Floods: The flood impact on the infrastructure, Tailings lost as a result of flooding, and geotechnical assessment of safe areas for future infrastructure development were assessed. Compilation of the findings in a report is ongoing.

Equal opportunities and gender: Equal opportunities and gender issues affecting communities in mining areas were mainstreamed in Karamoja, Busia Kassanda, Buhweju and Wakiso mining sites. They were also incorporated in the sector work plans including NDP III, JSR and Annual work plans.

PROGRESS ON PROMOTING REGIONAL AND INTERNATIONAL COOPERATION

To promote research and Development by staff, DGSM subscribed to international journals including: African Mining, Mining Journal magazine, International Journal of Mining, Reclamation and Environment, International Journal of African Earth Sciences and Minerals Engineering periodicals. UGX 4,000,000 Shillings was submitted to CTBTO, AMGC (former SEAMIC) in Tanzania in respect of collaborative research and annual subscription fees.

1 INTRODUCTION

The Directorate of Geological Survey and Mines is mandated to establish, promote the development, and strategically manage and safeguard the rational and sustainable exploitation and utilization of mineral resources for socio-economic development of the people of Uganda in line with the NDP III and VISION 2040.

2 INSITUITIONAL FRAMEWORK

The Directorate of Geological Surveys and Mines is composed of three Departments. These include: The Department of Geological Surveys; Mines Department; and Geothermal Resources Department. The Directorate is headed by a Director and each Department is headed by a Commissioner.

Geological Survey Department (GSD) is responsible for establishing the mineral potential of Uganda as well as promoting the development of the established mineral targets. This is done through geological, geochemical and geophysical surveys, Laboratory services and geoscientific data dissemination. The Department is also in charge of geohazards mapping and advisory services.

Mines Department is mandated to license and regulate exploration and exploitation of mineral resources, ensuring compliance to the mining legislation and promotion of sustainable mining and development of the mineral resources.

The Geothermal Resource Department on the other hand focuses on mainly exploration, promotion and development of the country's geothermal resources.

DGSM works closely with other MDAs such as MFPED, NFA, UWA, DoP, PAU and the Uganda Police Force to realize its mandate

3 PERFORMANCE OF THE DIRECTORATE

3.1 GEOLOGICAL SURVEY DEPARTMENT

3.1.1 Policy Formulation Regulation

Strategies for promotion: Strategies for minerals Mineral Sector promotion of battery manufacture, dimension stones and ceramics were developed.

NDP III: Formulated Mineral Based Industrialization Program for incorporation in the NDP III together with other stakeholder MDAs

3.1.2 Institutional Capacity

3.1.2.1 Infrastructure

Minerals Laboratories Equipping and Systems Development: Activities to equip and develop systems in the Minerals Laboratories at DGSM were undertaken. Procurements were initiated and some contracts awarded implemented. However, the project was greatly affected by the global lockdown and stoppage of commercial flights due to COVID-19 Pandemic. Pending Contracts and procurements are being fast tracked for execution this FY2020/21.

Figure 1 below shows some of the newly installed equipment and refurbishments, while Appendix 6.1 is a summary of the progress and anticipated progress by June 2021



Figure 1: institutional capacity development at DGMS Mineral Laboratories. Above- newly installed large sample drying oven (left) and Benchtop oven (right) in the Mineral Dressing Laboratory at DGSM in Entebbe, Middle - Newly remodelled and refurbished laboratory.

Rewiring of DGSM Blocks: Rewiring of DGSM Office Blocks by M/s. Ficah Enterprises Limited commenced and progress is at 89%

Drilling Rig: Supply contract extended to August, 2020. The contract was affected by lock down due to Covid-19 pandemic.

Securing of DGSM land: Survey was done and Land title has just delayed due to lock down as a result of Covid-19 Pandemic.

IT/ICT specialized equipment: A drone (UMAV) was procured, awaiting training of users.

3.1.2.2 Human Resource

Subscription to international journals: To promote research and Development by staff, DGSM subscribed to international journals including: African Mining Journal magazine, International Journal of Mining, Reclamation and Environment, International Journal of African Earth Sciences and Minerals Engineering periodicals.

Geoscientific data/information sharing: GSD continued to collaborate with other organizations in order to exchange geoscientific data/information relevant for staff empowerment in the mineral sector. Publications and reports were received in the Documentation Centre (DGSM) and shared.

Performance Compliance: The Performance Compliance related to plans, laws and strategies workshop was undertaken by staff on 22nd August, 2019 at DGSM Office in Entebbe. It was conducted by a team of Auditors.

Capacity building of staff: Supported capacity building of staff for mineral exploration, geological mapping and data analysis at DGSM offices specifically in REE exploration techniques on 28/02/2020, Uranium by experts from IAEA on 05/03/2020.

Long Term Training:

- i) Mr. Isaac Moses Ajule, Laboratory Technician completed a Master of Science in Analytical Chemistry at Kingston University in London, United Kingdom and resumed work at DGSM.
- ii) Ms. Erios Naiga, Documentation Officer continues with a three (3) years MSc. Degree in Informatics at Gyeongsang National University in South Korea.

- iii) Keith Tunde (Geologist) continues with Masters in Environmental Management studies at Kingstone University, London, UK
- iv) Sudan unity Birungi, (Geologist) continues with a Master of Science degree in Geotechnical Engineering in Malaysia.
- v) Jacqueline Nakirrija (Geologist) continues with a MSc in GIS at Makerere University
- vi) Martin Ekiryagana (Senior Staff Cartographer) and Stella Nankinga (Geologist) continue with their MSc. Degrees in Environment and Natural Resources management at Makerere University.
- vii) Stellah Pule (Staff Cartographer) and Henry Mulindwa (Geologist) continue with a M.Sc. In Natural Resources Management at Nkumba University.

Promotions: Six (6) Officers were promoted (Appendix 6.2) to various levels: Chemist (1), Senior Chemist (1), Senior Geophysicist (1) and Assistant commissioner (3).

Retirement: On other hand, **Mr. Baguma Zachary**, Commissioner /Geological Survey Department and Ag. Director/DGSM retired from public service on 19/6/2020 after making the retirement age of sixty (60) years. The office of Director was handed over to Ms. Agnes Alaba, Commissioner/Mines Department. The handover of Office was witnessed by the MEMD/HRM Office led by Ag.AC/HR, Ms. Samali Ibanda. The Call for filling the position of Commissioner/GSD was made (internally) and applications to fill position were submitted to HRM/MEMD in June, 2020 for further management.

3.1.3 Mineral exploration, promotion, production and value addition

3.1.3.1 Mineral Exploration

Rare Earth Elements (REE): Geological survey for Rare Earth Elements (REE) and base metals in Bukusu, Manafwa was undertaken. An anomaly for mineral exploration follows up was identified. A paper for strategic minerals to guide value addition and mineral development was also developed.

Geodata integration: Geological data for assessment of iron ore in SW Uganda was integrated. Ten (10) targets were selected for drilling iron ore. Terms of reference for EU funded Mineral Exploration and Institutional Capacity Building programme were also formulated.

Sembabule Uranium Exploration: Gravity and magnetic surveys on the uranium prospects in Ntuusi/Kyambogo and Lwensakala in Sembabule

District was undertaken to investigate any structural relationship between the anomalies and their host environments. It was observed that Uranium mineralization at Ntuusi is clearly controlled by dykes ('cracks') which act as pathways for the mobile elements. Ore drilling for laboratory analysis is recommended for Ntuusi prospect. No further work is required at Lwensakala as it exhibits low counts

Monitoring of Exploration licences: Review of returns and field monitoring of Exploration licences for compliance was undertaken

Sensitization for Airborne Geophysical Survey: Sensitization for Airborne Geophysical Survey of Karamoja was undertaken during regional consultative workshop in Moroto. Airborne Geophysical Survey of Karamoja expected to commence during this FY2020/21.

Laboratory Services: The Mineral Laboratories continued with mineral dressing and analytical services so as to support mineral exploration tasks. Samples were prepared for analyses and police

3.1.3.2 Promotion

Communication strategy: The first Draft of the Communication strategy for the Directorate of Geological Survey and mines was developed by the contractor (Live works Ltd) in June 2020. This main objective of the strategy is to improve on the mineral sector promotion and attract more investment to the sector.

Conference and workshops: The mineral sector was promoted at five (5) local conferences/workshops. These include: joint sector review 2019, Mineral wealth conference 2019, Energy and Mineral Week 2019, the 12th annual Tax payers 'appreciation week in September 2019 and the Rwenzori Local Economic Development Expo2020.

Forum on China-Africa Cooperation: Mineral Sector as promoted during a meeting on Forum on China- Africa Cooperation together with other sectors at Ministry of Finance Planning and Economic Development (MoFPED).

Geological and Mineral Information System (GMIS) was launched. The system is used for capturing, processing and dissemination of geo-information. Through the GMIS all the information systems, maps, reports, publications, cadastre portal etc. within DGSM can be accessed.

Directorate Website: GSD continued to manage DGSM website www.dgsm.go.ug and Facebook page (Directorate of Geological Survey and

Mines) where inquiries were attended to. The sector has received enormous public engagement.

Geological and Mineral Atlas: Compilation of the Geological and Mineral Atlas was undertaken. Launch of the final document is expected during this FY2020/21.

Visitors at Officer: GSD continued attending to inquiries from staff and Visitors and dissemination of various information (Mineral policy, Mining Act, Mining regulations, reports etc.) to the clients.

Geoscientific data compilation: Compilation of geological information for dissemination to stakeholders and investors was undertaken (e.g. Figure 2)

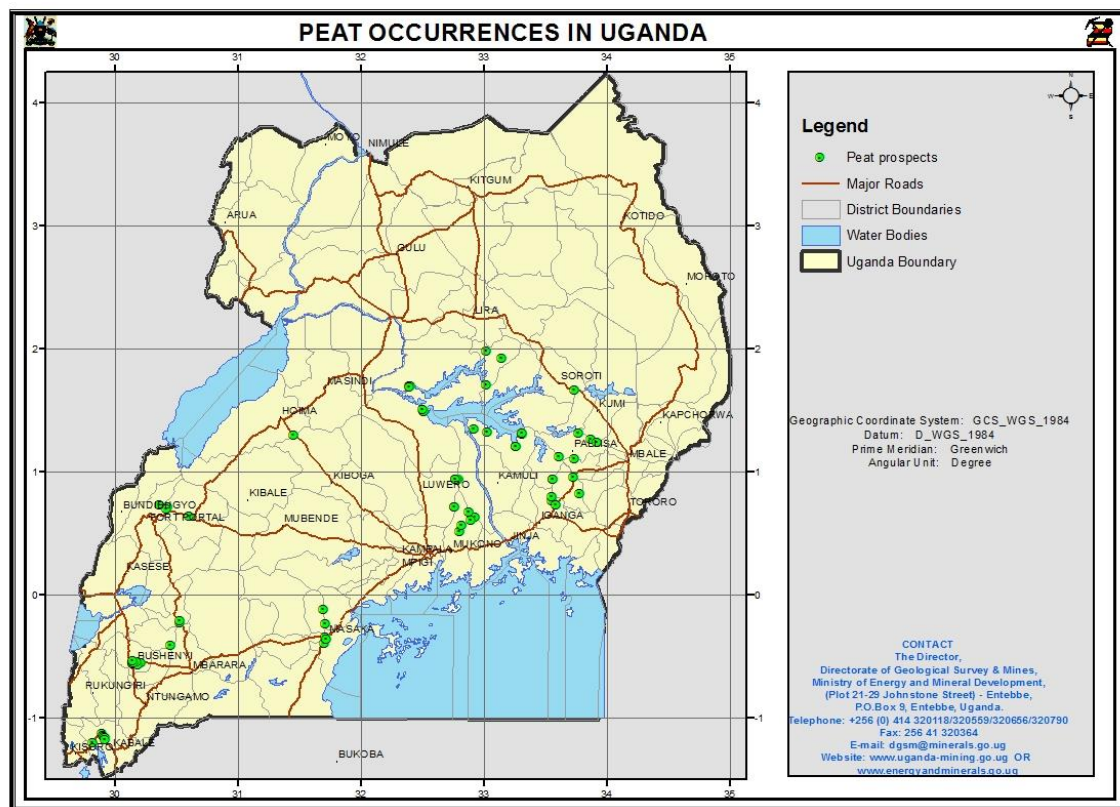


Figure 2: Peat (green points) Potential in Uganda. Huge potential around Lake Kyoga, Central and Western Regions of the country.

DGSM Centenary Celebrations: In 2019, DGSM made 100 years of geological surveys in Uganda. Celebrations were scheduled for April 2020 but due to Covid-19 Pandemic it was not possible. Fresh arrangements to have the celebrations in October 2020 are under way.

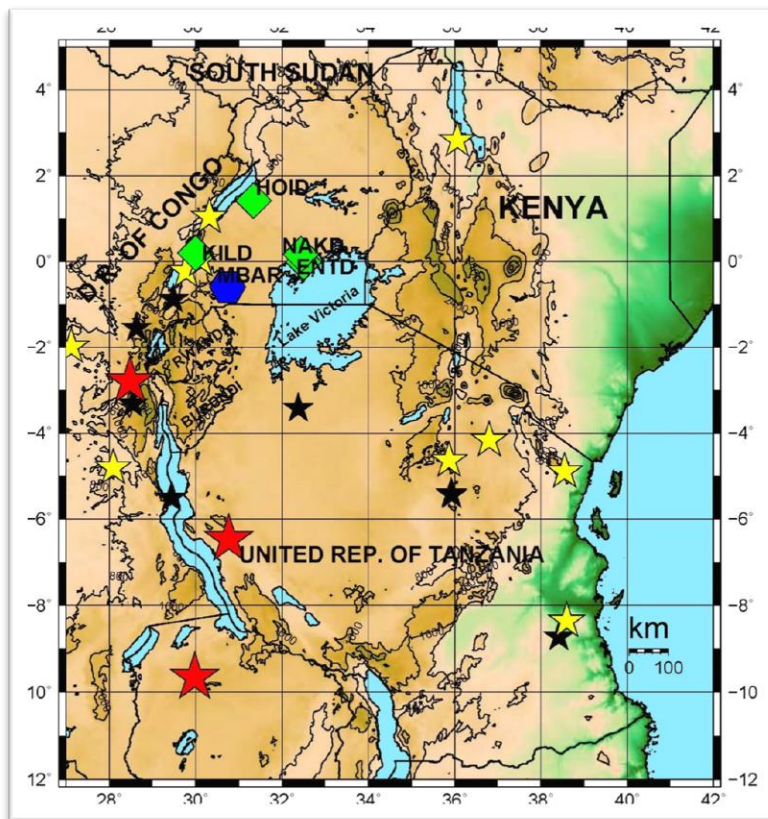
3.1.3.3 Production and Value addition

Review of quarterly performance reports and engineering design tests for material handling infrastructure for construction at Namekara Vermiculite Mine by the licensee, Namekara Mining Company Limited was undertaken. This was undertaken in view of assessing the mining operation’s performance as regards to sustainable exploitation and value addition.

3.1.4 Health and Safety

3.1.4.1 Earthquake Monitoring and advisory services

DGSM Continued to operate and maintain the National Seismic Network comprising five (5) seismic stations located at Entebbe, Hoima, Nakauka, Kilembe and Mbarara-Kyahi, supported by the seismic maintenance team Partners from University of California San Diego (UCSD-IDA Project), USA who assisted DGSM in repairs and maintenance, and in a special way for upgrades of the Mbarara Global Seismic station in July, 2019.



The seismic network recorded 23 earthquake events (Appendix 6.3) of which four (4) originated (had epicentres) in Uganda i.e. Ntoroko, Kasese, Rubirizi and Ntungamo), (Figure 3).

Figure 3: Seismicity of Uganda during the Period July 2019 - June 2020. The BLACK star represents (4.0 – 4.5), YELLOW star for (4.6 - 5.0) and RED star (5.1 - 5.5) magnitude range on Richter tor scale. The GREEN diamonds represent broadband seismic stations (ENTD, NAKD, KILD, HOID) while the BLUE hexagon represents the global seismic station MBAR.

Generally, Uganda experienced Light-Moderate Earthquake events (Figure 3 and Appendix 6.3) which are Often felt, but cause minor damage.

3.1.4.2 Infrasond network

Five (5) locations for establishing an infrasond network (Figure 7) were identified. The infrasond network is expected to guide in among others, mitigation of Lightning in Uganda. Construction of the stations was largely affected by limited funding from government. An appeal for extension of the project to accomplish the project has been submitted.

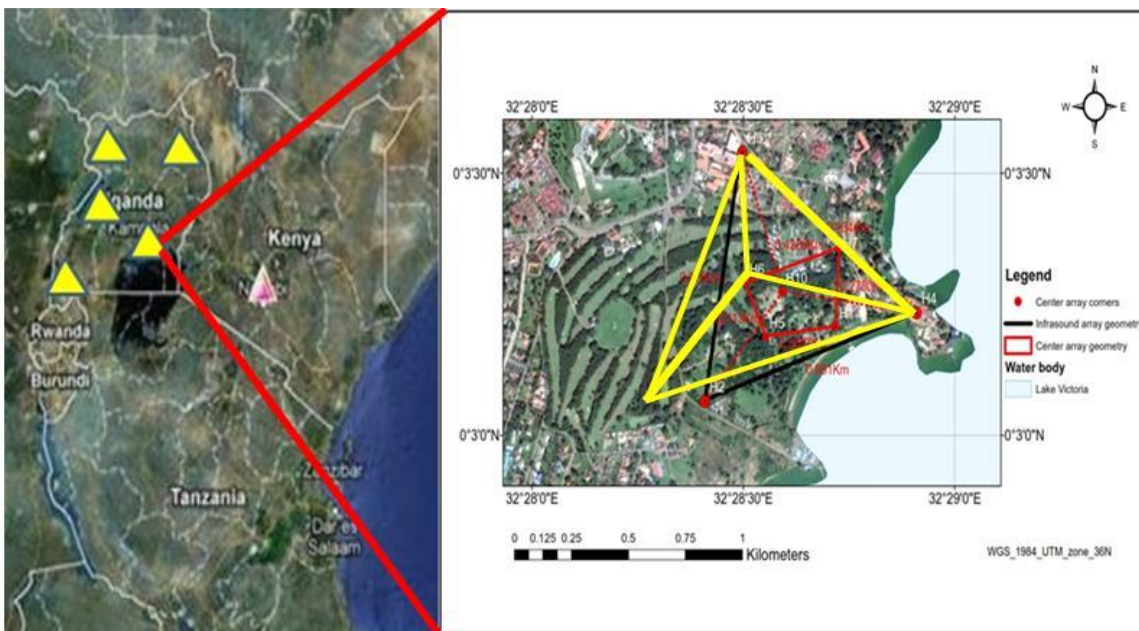


Figure 4: Uganda Infrasond Network (5 stations in Yellow triangles on map) and Entebbe Infrasond Station (under construction).

3.1.4.3 Kilembe Mines

The flood impact on the infrastructure, Tailings (Figure 4) lost as a result of flooding, and Geotechnical assessment of safe areas for future infrastructure development were assessed. Compilation of assessment report is ongoing.



Figure 5: Cobalt and Nickel rich Kilembe Mines tailings stockpile was eroded and driven downstream (Lake George) by the floods

3.1.4.4 *Bundibugyo geohazards*

Investigation of geohazards in Bwamba County, Bundibugyo District to assess the types, extents, magnitudes and impacts of the geo-hazards (Figure 5) and provide advice to the government and the public was undertaken. Preliminary findings revealed that the geohazards there (subsidence, landslides and flooding) are not related to tectonic activity as earlier thought, but human activity, unconsolidated geologic formation and heavy rains received in recent times.



Figure 6: Geohazards in Bundibugyo District. Note the damages caused by ground cracking, subsidence and land slides

3.1.4.5 Kagadi Lake formation claims

The reported Lake Formation at Kobushera Trading Centre, Mpeefu Sub-County, Kagadi District was investigated. Flooding (Figure 5) was observed to have been caused by accumulation of water over impervious geological formation, granite underneath.



Figure 7: Floods in Kagadi, A house (Top) reclaimed from the flood by pouring marram around it, and Flooded coaco garden (Bottom)

3.1.5 Contribution to international organizations

UGX 4,000,000 Shillings was submitted to CTBTO, AMGC (former SEAMIC) Tanzania in respect of collaborative research and annual subscription fees.

3.2 MINES DEPARTMENT

3.2.1 Policy Formulation Regulation

The Mining and Minerals Bill 2020 was reviewed, conducted stakeholder consultation and incorporated the stakeholders' concerns in the draft bill. Final drafting of the Bill is being undertaken by First Parliamentary Council.

ICGLR (Prevention of Illegal Exploitation and Illicit Trade in Designated Minerals) Regulations 2019 were formulated. Review is ongoing under guidance of Ministry of Foreign Affairs and the Office of the Solicitor General for final drafting and signing off by Minister of Foreign Affairs.

3.2.2 Institutional Capacity

3.2.2.1 Infrastructure Development

Beneficiation centres: Construction of mineral beneficiation centres in Ntungamo is at 50% while that at Fort Portal is at 30% and progressing well.

Additional office space: Construction of additional office space at DGSM and partitioning of Mines Administrative block was undertaken.

3.2.2.2 Human Resource Development

- (i) John Kennedy Okewoling (mining Engineer) completed MSc. degree in Mining Engineering in UK that he commenced in September 2018
- (ii) Dorothy Namuli (LA), continues with a Master of Science in Information System Management at Makerere University

3.2.3 Mineral exploration, promotion, production and value addition

3.2.3.1 Licensing Status

Licence applications and returns were captured and reviewed, and granted licences maintained in the Mining Cadastre and Registry System (Table 1). The table shows an observed 5.6% increase in the number of valid licences by close of FY 2019/2020 compared to FY 2018/2019 (Table 1). This is mainly attributed to the e-government licensing system which was recently (FY2018/19) established. The online Mining Cadastre and Registry System is a self-service licensing system used by clients to apply, follow the review

process and also manage granted licences (submit returns) from the comfort of their offices.

However, the percentage increase is lower than anticipated. This is may be attributed to the global Covid-19 Pandemic which grossly affected most economic activities in the world. Also a ban on export of unprocessed minerals is one of the local factors affecting mining and exploration activities. This cannot be underrated in decelerating the desire by investor to acquire and or renew mineral rights.

Table 1: Licensing status as at 30/06/2020

Type of Licence	Licences as at 30/06/2019	Licences as at 30/06/2020
Prospecting License	159	132
Exploration License	319	341
Retention License	3	4
Location License	100	121
Mining Lease	44	46
Mineral Dealers*	50	58
Goldsmith License*	-	11
Total	675	713

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

3.2.3.2 Mineral production

Production dropped by 25.6% in 2019/20 compared to that of 2018/2019 (Table 2). This is attributed to ban on export of unprocessed minerals which is one of the local factors affecting mining and exploration activities.

Table 2: Mineral production of FY2019/2020 Verses 2018/2019

Mineral	Average Value In 10 ³ Ugx			
	Q1	Q2	Q3	Q4
Limestone	27531171.6	30196750	28413631	9,075,091
Pozzolana	3702700.68	4544975	4927196	4,244,014
Gold	661128.9509	322314	384502	107,052
Vermiculite	1442520.6	1551488	1934960	987,832
Cobalt**	0	0		0
Wolfram	1081056.525	620656	498779	0

Syenitic Aggregate	51245.88	30571	26617	17,537
Kaolin	1000	29200	29720	0
Iron Ore	0	0	0	0
Granite	48906.4125	58134	0	30,451
Lead	0	0	0	0
Coltan (30% Purity)	112231.35	572522	343797.3	0
Tin (75% Purity)	0	0	0	0
Beryl (1% Beryllium)	0	0	0	0
Manganese (Above 46% Mn)	0	0	0	0
Sub Total	34,631,962.00	37926610	36559202	14,461,977
GRAND TOTAL (FY2019/2020)				123,579,751.3
GRAND TOTAL (FY2018/19)				166,074,440.0

3.2.3.3 Mineral imports statistics

No Mineral imports.

3.2.3.4 Mineral exports statistics

Mineral exports dropped by 52. % in FY2019/20 compared to that in FY2018/19. This is attributed to ban on export of unprocessed minerals which is one of the local factors affecting exploration, mining and export activities. The only exports done between July and December, 2019 were by four (4) Mining Companies led by Ki3R Minerals Limited after arguing their case in Parliament. However, URA later reinstated the earlier ban.

Table 3: Mineral exports in FY2019/20 compared to FY2018/19

Mining Company	Mineral	Production area	Gross Value (UGX)	Royalty (UGX)
Aernus Limited	Gold	Busia	5,772,741	h288,638
3T Mining Limited	Tantalite	Wakiso	649,014,084	32,450,704
Ki3R Minerals Limited	Wolfram	Rubanda	321,332,015	16,066,601
Ki3R Minerals Limited	Wolfram	Rubanda	321,332,015	16,066,601
Ki3R Minerals Limited	Wolfram	Rubanda	357,035,560	17,851,778
Ki3R Minerals Limited	Wolfram	Rubanda	357,035,560	17,851,778
African Panther Resources (U) Ltd	Cassiterite	Kikagati & Isingiro	532,612,618	26,630,618
African Panther	Cassiterite	Kikagati &	54,364,606	2,718,231

Resources (U) Ltd	Isingiro		
GRAND TOTAL (2019/20)		2,598,499,199	129,924,949
GRAND TOTAL (2018/19)			274,374,335

3.2.3.5 Non-Tax-Revenue (NTR)

NTR dropped by 21.8% in FY2019/20 compared to that of FY2018/19. This is attributed to ban on export of unprocessed minerals which is one of the local factors affecting exploration, mining and export activities.

The main contributor to NTR is **ROYALTIES** from Mining and Mineral Dealers Licences. Royalties account for more than 50% of all the NTR. The contribution of **ROYALTIES** to NTR in FY2019/20 and FY2018/19 was about 68% and 52% respectively. Ban on export of minerals decreases mining and mineral export activities and hence decrease in royalties and NTR. Ban on export of unprocessed minerals should be lifted.

Table 4: Non-Tax-Revenue (NTR) for FY2019/20 compared with FY 2018/19

ITEM	Quarterly and Annual NTR (US\$ x 10 ³)				
	Q1	Q2	Q3	Q4	Q1-Q4
ROYALTIES PAID BY HOLDERS OF MINERAL RIGHTS OR MINERAL DEALERS-	2,480,458,210	1,191,073,933	1,936,276,986	901,615,565	6,509,424,694
ANNUAL MINERAL RENTS(OTHER THAN FOR PROSPECTING LICENSE)-	998,785,000	901,175,000	448,945,000	2,867,940,000	5,216,845,000
MINERAL DEALERS LICENSE-	62,000,000	22,000,000	250,000,000	52,000,000	386,000,000
APPLICATION OF EXPLORATION LICENSE-	25,000,000	54,000,000	18,000,000	18,000,000	115,000,000
APPLICATION FOR A PROSPECTING LICENSE-	24,000,000	22,000,000	20,000,000	2,500,000	68,500,000
APPLICATION FOR A LOCATION LICENSE-	6,400,000	2,400,000	7,200,000	8,000,000	24,000,000
SURRENDER OF EXPLORATION LICENSE-	1,500,000	-	-	-	1,500,000
TRANSFER OF MINERAL RIGHT OR OF SHARE OF THE RIGHT IN RESPECT OF-	-	-	-	-	-
ANNUAL FEES FOR GOLDSMITHS LICENCE-	4,000,000	2,000,000	24,000,000	-	30,000,000
ANNUAL MINERAL RENT FOR RETENTION LICENSE-	-	-	-	-	-
PREPARATION OF A MINING LEASE-	-	-	-	-	-
RENEWAL OF A MINING LEASE-	-	-	-	-	-
LATE LODGEMENT FEES AND LATE LODGEMENT PERIOD-	3,075,000	1,000,000	1,250,000	-	5,325,000
BLASTING CERTIFICATE FEES	-	500,000	-	-	500,000
TRANSFER OF MINERAL RIGHT OR OF SHARE OF THE RIGHT IN	-	-	-	-	-

RESPECT OF-					
TRANSFER OF EXPLORATION LICENSE-	-	-	-	-	-
REGISTRATION OF MINING INSTRUMENTS-	3,000,000	16,000,000	15,000,000	7,600,000	41,600,000
APPLICATION FOR RENEWAL OF RETENTION LICENSE-	-	-	-	-	-
APPLICATION FOR A MINING LEASE-	10,000,000	10,000,000	-	-	20,000,000
APPLICATION FOR RENEWAL OF EXPLORATION LICENSE-	16,000,000	20,000,000	2,000,000	13,000,000	51,000,000
ISSUE OF NOTICE OF AMENDMENT OF EXPLORATION PROGRAMME-	2,500,000	-	500,000	-	3,000,000
APPLICATION AND PREPARATION OF A RETENTION LICENSE-	30,000,000	-	15,000,000	-	45,000,000
CERTIFICATE OF SURRENDER IN THE AREA COVERED BY A MINERAL RIGHT-	500,000	1,500,000	-	-	2,000,000
APPLICATION FOR RENEWAL OF A LOCATION LICENSE-	8,000,000	1,000,000	-	-	9,000,000
MAPS SALES	-	2,214,024	-	-	2,214,024
GRAND TOTAL (FY2019/20)	3,675,218,210	2,246,862,957	2,738,171,986	3,870,655,565	12,530,908,718
GRAND TOTAL (FY2018/19)					16,031,523,348

3.2.3.6 Monitoring and inspection of exploration and Mining activities

Kisita mining operations: Monitoring and inspection established that kisita mine has been infiltrated by illegal miners despite protection from PMPU.

Mining Lease (ML 4603) Suspension: On 05th June, 2020, ML 4603 covering Kisita mine was suspended for contravening sections 50, 66 and 106 of the Mining Act, 2003 and failure to remedy breaches of working obligations communicated in a number of notices.

Marble tracks Impounded in Karamoja: Inspection operations in Karamoja region traced the movement of trucks carrying Marble and Limestone and documenting all locations of destination factories and impounded vehicles operating illegally and without permits. The objective is to ensure compliance with legal requirements such as possession of a Mining License and/or Mineral Dealers License to recover the royalty due.

Violence in Moroto gold mining village: The Officer in Charge of Karamoja Regional Mines Office reported an incident at Nakabaat gold mining Village, in Moroto district where violence orchestrated by illegal artisans and miners

erupted when a group of Matheniko together with Turkana warriors rioted when advised to acquire licenses for mining.

Monitoring of gold refineries: inspections to four gold refineries: Simba, Bullion and Metal Testing and Smelting Co at Nakawa and African gold refinery in Entebbe were conducted. All the refineries refine gold up to 99.99% and are all operation under free zone and manufacture under Bond.

License Cancellations: Five (5) Mining Leases belonging to Great Lakes Iron and Steel, Shaft Sinkers, Kigezi Steel, Eastern Mining and Building Majesty were cancelled. Three of the cancelled licenses have sought for Administrative review that is still being determined by the Minister.

Administrative Review over failure to grant an export permit: KI3R mining Company applied for Administrative review to Minister for failure to grant them an export permit for Wolfram.

Dispute Resolution over land in Tiira, Busia Gold Mine: A case of criminal trespass by holders of ML 4128 on community land in Tiira, Busia District was investigated. It was established that the current mining company, "Greenstone Resources Ltd" took over a land lease that was about to expire and never renewed the land lease after expiry. Consequently, several squatters settled on the land with some now over 15 years ago and therefore legal occupants, according to the current land law. It was recommended that the mining company takes steps to renew the land lease in respect of the mining lease area.

Sukulu Phosphate and steel project: Construction of most of the required infrastructure is complete. One thousand two (1,200) workers are employed by the company and subcontractors, with a local content composition at 83% Ugandan with the rest (17%) being Chinese installing the plant machinery.

Activities including production of fertilizers and opening other lines of the plant have been largely affected by the case against Guangzhou Dongsong Energy Uganda Limited, a Chinese company that is undertaking the Sukulu phosphate mining project in Tororo district. The case is under court of appeal.

Tibet Hima Mining Company limited (THMCOL) – Kilembe Mines Concessionaire:

Following Tibet Mining Company Limited's underperformance of their debt and work obligations, The Minister of Finance, Planning and Economic Development issued the Company a Termination Notice and later THMCOL's Concession Agreement.

ToR's for the selection of a new operator for Kilembe Mines were done and a meeting was held on 12th March 2020 at the Privatization Unit to conclude the RFP for the Development of Kilembe Mines. Twenty-six (26) parties expressed interest in taking over Kilembe Mines under a restrictive bidding process.

A Cabinet Memorandum on revamping Kilembe Mines was prepared to be presented to cabinet before end of March 2020, which did not happen due to COVID-19 pandemic restrictions. It should however be noted that, Kilembe Mines has been dilapidated by floods and there is need to re-evaluate the current asset value of the entire infrastructure and liaison with other relevant MDAs on strategic intervention to protect it from more flooding before the investors loose interest.

3.2.3.7 Mineral Traceability and Certification

Preparations for the implementation of the Regional Initiative on Fight against the Illegal Exploitation of Natural Resources are in final stages. Mineral Certification Regulations to guide on the process have been formulated and are under review by DGSM, MoFA and Office of the Solicitor General before signature by the Minister for Foreign Affairs. An advertisement for personnel to work on the project was also published recently.

Also, the Federal Ministry of Economic Cooperation and Development (BMZ) through the Federal Institute for Geosciences and Natural Resources (BGR) agreed to continue providing technical support on the implementation of the ICGRL mineral certification system in the framework of the Regional Initiative to Fight against the Illegal Exploitation of Natural Resources (RINR), for a duration of thirty (30) months from 1st July 2020 to 31st December 2022. Extension of MOU awaits Clearance from the Solicitor General.

3.2.3.8 Sensitization and registration of ASMs countrywide.

The software for the biometric registration has been developed and awaits integration with NIRA's database. The Consultants activities were heavily impacted by the Corona Virus pandemic and the delay in procuring registration equipment. A one-year extension of the project has been sought to conclude the process.

3.2.4 Health and Safety

Equal opportunities and gender issues affecting communities in mining areas were mainstreamed in the work plans including NDP III, JSR and Annual work plans.

3.3 GEOTHERMAL RESOURCES DEPARTMENT

3.3.1 Policy Formulation Regulation

Review of the draft Geothermal Policy, Cabinet Memorandum and Regulatory Impact Assessment was done. The draft documents are ready for validation in an Inter-Ministerial Workshop before they are presented to the Ministry Top Management for transmission to Cabinet.

3.3.2 Institutional Capacity

3.3.2.1 Infrastructure Development

Land Acquisition by Government: A field visit was conducted to Kibiro and Panyimur to identify land for field base camps. Due diligence is ongoing to ensure land has no issues or encumbrances.

Purchase of Specialized Machinery & Equipment: The following equipment and softwares are being procured under a Geothermal Component of the WB ERT-III programme in the Ministry of Energy and Mineral Development:

Up-grade of MT Equipment: A contract (MEMD/ERT/NCONS/2018-2019/00285/01) was signed between MEMD and M/S Phoenix Geophysics Limited to up-grade MT equipment to MTU-5C. MT Equipment was shipped to the M/S Phoenix workshop in Toronto, Canada on 8th August 2019.

Temperature measuring equipment: Temperature measuring equipment was procured and is being tested before it is deployed in the field to measure the down hole temperature that will be used to determine the temperature gradient.

3.3.2.2 Human Resource Development

Geothermal Technical Workshop

On 7th August 2019, a technical review workshop was held at DGSM Boardroom to review and up-date plans, compare progress against plans so that assessment of performance can be made. It was recommended to carry out detailed surface studies at Ihimbo and initiate detailed surface studies at Kanangarok in Kaabong District.

Technology Transfer Activities/Information Dissemination

Geothermal related technical papers for presentation at the World Geothermal Congress (WGC) in Reykjavik Iceland in April 2020 were prepared. This was for showcasing our exploration results to-date to the world geothermal community. However, due to Covid-19 Pandemic, the conference was not attended.

Field Training: Four staff were trained and mentored in identifying and mapping surface geothermal manifestations at Kagamba, Karungu, Bubale, Rubaare, Kisizi, Burama and Ihimbo geothermal areas (Figure 8). This field training amplified their skills and ability in mapping surface geothermal indicators. This training will enhance their performance and is being supplemented by routine in-house training.



Figure 8: Temperature measurement at Ihimbo geothermal area newly recruited staff in GRD

Graduate and undergraduate internship training

Six (6) graduate and undergraduate interns from Makerere, Nkumba and Kyambogo Universities were trained and mentored in identifying and mapping surface geothermal features at Kibiro geothermal prospect in Hoima District (Figure 9). The field activity was supplemented with in-house training the DGSM boardroom.



Figure 9: Geological and hydrothermal observations at Kibiro by internee students and graduates

Gayaza High School: Twenty (20) students from Gayaza High School were given a presentation about geothermal energy, its benefits and uses at DGSM Boardroom.

(E-procurement workshop: Staff attended the workshop at DGSM boardroom.

Kitagata Geothermal Tourism Project: A staff from the Geothermal Resources Department (GRD) together with staff from Ministry of Tourism, Wildlife and Antiquities; Uganda Tourism Board; and Bukedde TV visited Kitagata, Rubaare, Minera, Rubabo and Ihimbo hot springs in Southwest Uganda (Figure 10). The visit was to assess how these sites can be packaged as tourist destinations. A report is being compiled as a deliverable.



Figure 10: The team at Kitagata hot springs in Sheema District.

Geothermal drilling: Three (3) staff namely: (i) Mr. Isa Lugayizi (Senior Geologist/Mapping), (ii) Mr. Mark Atwine (Assistant Driller), and (iii) Mr. Fred Ssemuyaba (Geophysicist) completed Atwine a three months hands on training in geothermal drilling, well site geology and Reservoir Engineering at the Geothermal Development Company (GDC) in Kenya. The training was sponsored by the World Bank under ERT-III Project.

Long Term Training

- (i) Mr. Eria Kaahwa – Geologist is pursuing a three (3) years M.Sc. degrees in Earth Resources Engineering at Kyushu University in Japan.
- (ii) Ms. Jacinta Achieng – Chemist is pursuing a three (3) years M.Sc. degrees in Earth Resources Engineering at Kyushu University in Japan. The training which started in August 2018 is Sponsored by The Japanese Government.

Recruitment: Four (4) Geoscientists were recruited during the FY2019/20. These include: Angel Rusoke Geoscientist (GIS), Brian Aijuka - Geologist, Benjamin Twesigye – Geochemist and Oris Ouma – Reservoir Engineer. GRD is grateful for adding on its number. However, HR/MEMD is still called upon to ensure that the remaining vacant positions are filled for better performance of the Department.

3.3.3 Mineral exploration, promotion, production and value addition

3.3.3.1 Geotools™ data processing:

Data Processing, synthesis, interpretations, and modelling using “geotools” was conducted during Quarter One (Q1) on Ihimbo, Rubaare, Katwe, Panyimur and Kibiro data. A preliminary conceptual model was produced together with synthesis maps and sections. Like other rift valley geothermal prospects, Ihimbo is a fault-controlled extensional type system. The meteoric water which recharges in the escarpment is heated during deep circulation in an area of high heat flow and highly fractured upper crust and ascends along the rift bounding fault system.

3.3.3.2 Gravity Survey:

Area specific gravity survey in Panyimur was undertaken. The data generated was given to an MSc student at Kyushu University in Japan. Findings shall guide in refining the subsurface conceptual models at Panyimur.

3.3.3.3 Geothermal Site Map Prepared

A geothermal Potential map of Uganda with geothermal occurrences overlain on geology was prepared (Appendix 6.4). The map was part of a technical paper which was to be presented at a Conference in Iceland in April, 2020, but due to the Covid-19 Pandemic, was not possible.

Geothermal Energy Direct uses investigations: Collection of data for possible direct uses of geothermal energy such as in swimming pools, drying foodstuffs, body therapy, etc. was undertaken.

3.3.3.4 Drilling of Temperature Gradient Hole

Geothermal resources exploration activities continued during the FY 2019/20. Eight (8) Temperature Gradient Holes (TGH) at Kibiro were drilled. Well temperature measurements/logging activities are ongoing to establish the suitability of developing geothermal energy plant in the area. More TGH drilling in Panyimur were disrupted by environmental concerns caused by drilling of the last (8th) TGH at Kibiro.

3.3.3.5 Promotions

TV Talk Show: A Television talk show was conducted with Record TV to create awareness and enhance public understanding of geothermal energy

utilization, benefits and government's near to medium term plans to develop this natural resource.

Energy and Mineral Exhibition Week: Staff exhibited during the Energy and Mineral Week at Lugogo to raise awareness of the public about geothermal energy utilization (power production and direct uses) and benefits (Figure 8).

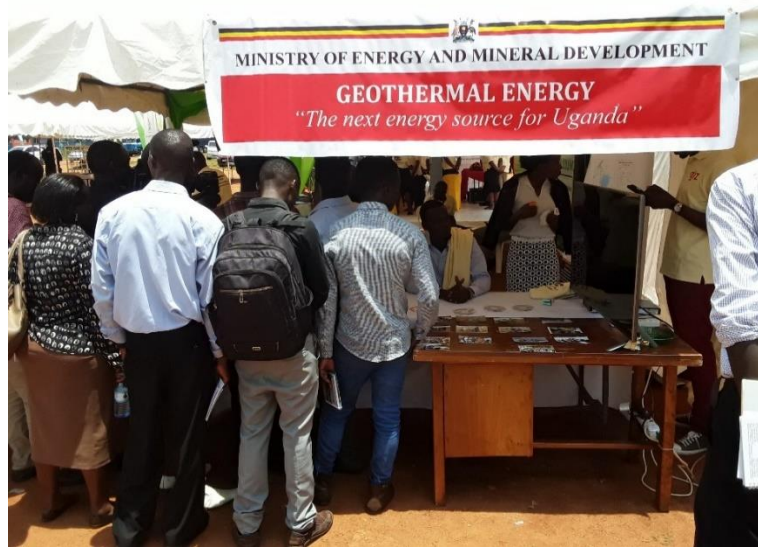


Figure 11: Geothermal Resources awareness Exhibition during the Energy and Mineral Week 2019 at Lugogo in Kampala.

3.3.3.6 Inspections and Monitoring

Inspections and monitoring of operations in Geothermal licences was undertaken:

Bantu Energy (U) Ltd: Studies included shallow temperature surveys, geophysical surveys and structural mapping. Principal faults were identified in the area.

Moto Geothermal Projekt Limited: Geochemical and geophysical data acquisition, processing, analysis and interpretations was carried out at the prospect. Heat flow measurements were used to estimate the power potential of Ihimbo Geothermal prospect. However, the heat loss from a geothermal system is a poor estimate of its power potential.

3.3.4 Health Safety

3.3.4.1 Environmental concerns at Kibiro

Drilling of eight (8) Temperature Gradient Holes (TGH) at Kibiro which was completed on 29th March 2020 caused environmental problems during the drilling of the last hole. Drilling was suspended until NEMA recommendations are implemented. NEMA recommendations include:

- (i) The Developer (MEMD) was advised to stop all TGH drilling activities in Kibiro and Panyimur until a comprehensive ESIA is undertaken in accordance with the National Environment Act No.5 of 2019;
- (ii) Arrangements be made to engage with the persons whose property was damaged as a result of the above incident so that they can be equitably compensated for losses incurred and helped to restore their livelihood where applicable; and
- (iii) the MEMD should ensure proper clean-up of the affected site by the contractor – including at Mr. Kiiza’s affected homestead upon reaching an amicable agreement in respect of any repairs or compensation towards damage occasioned by the incident.

Court Case: as consequence of the environmental issues due to drilling, three cases in Masindi High court, Kampala High Court and the East African Court of Justice (EACJ) were filed against GOU. All the necessary documentation and support has been and is still being given to AG for handling the suits.

4 PROJECTS DURING FY2019/20

DGSM had Four (4) government funded projects being implemented. These include:

- (i) **Mineral Wealth and Mining Infrastructure Development MWAMID** – Project supports most of the Directorate activities that cannot be met using recurrent budget, such as: Policy formulation and regulation, Mineral Exploration activities and institution capacity development
- (ii) **Mineral Laboratories equipping and Systems Development**, for building the capacity of the Mineral Laboratories to international accreditation standards
- (iii) **Design, Construction and Installation of Uganda National Infrasound Network (DCIUNIN)**, for establishing an infrasound Network country wide

- (iv) **Uganda Geothermal Resources Development Project**, for establishing Geothermal Resources in Uganda

These projects very much support the Directorate in realising its mandate. However, the projects have got pre-set goals, outputs and reporting obligations. Independent project performance briefs are therefore compiled by project coordinators and submitted separately.

(v) ACP-EU Development Minerals Project,

DGSM also is pleased to be an associate beneficiary of the of African, Caribbean, Pacific (ACP) Group of States, the European Union (EU) and the United Nations Development Programme (UNDP) Project in Development Minerals (industrial minerals; construction materials; dimension stones; and semi-precious stones) sector. The project is in 40 countries in Africa, the Caribbean and the Pacific. The Programme is implemented in partnership with the Ministry of Energy and Mineral Development in Uganda.

The achievements made among others include:

- (i) Baseline Assessment and Value Chain Analysis Reports finalized;
- (ii) Trainings on environment, community, health and safety finalized;
- (iii) Trainings on enterprise skills, value addition, investment promotion and market analyses finalized;
- (iv) Training on GIS and ore modelling finalized; sensitization of media and Members of Parliament finalized;
- (v) Support to the Develop the GIA (Gender Impact Assessment) Tool was done.
- (vi) Support to the review of the Mining regulations to accommodate e-government systems.

5 CHALLENGES AND RECOMMENDATIONS

5.1 CHALLENGES

- (i) Ban of export of raw minerals discourages both exploration, mining and inflow of new investors
- (ii) Limited funding to undertake planned activities and recruitment of staff in positions for the newly approved Directorate structure.
- (iii) Limited staff for, recruitment, capacity building and carrying out activities in newly approved Directorate structure.

5.2 RECOMMENDATIONS

- (iv) Ban of export of raw minerals should be lifted
- (v) The vacant posts especially those filled on replacement basis should be filled as soon as possible to lessen the gap
- (vi) Increase budgetary allocation to DGSM to allow for financial facilitation of the planned activities and recruitment of staff in positions for newly approved Directorate structure.

6 Appendices

6.1 LABORATORIES EQUIPPING AND SYSTEMS DEVELOPMENT UPDATES

#	Specific Objectives	Planned Project Outputs	Expected Progress	Remarks
1	To acquire analytical and mineral value addition equipment, accessories and consumables	At least eight (8) sample preparation equipment, three (3) analytical equipment, two (2) mineral identification and characterization equipment, and twenty-two (22) mineral value addition test equipment in place and running by June 2020	79%	Progress on acquisition of sample preparation equipment, analytical, mineral beneficiation equipment, and consumables and accessories is expected to be 62.5%, 80%, 66.7%, and 18%, respectively. The decimal performance is majorly due to very low funding in the first two years of the project, infrastructure constraints and budget cuts this FY 2020/21 as a result of the Corona Virus Pandemic.
2	To refurbish the physical structure of the laboratories and systems to support the required analytical and value addition capacity	Quality and standard laboratories and systems to support the required analytical and value addition test capacity in place by June 2019	70%	Minor refurbishments for installation of already acquired laboratory equipment is to be undertaken in the Petrology, Mineralogy and Gemology Laboratory, and a dust extraction system is to be installed in the sample preparation unit.
3	To undertake capacity building/training in analytical and value addition techniques	At least: one (1) chemist and one (1) mineral dresser trained at postgraduate, fourteen (14) technical staff trained on operation and maintenance of specialized	33%	Capacity building for staff which is very critical in lieu of competence being a key requirement for ISO/IEC 17025:2017 accreditation has taken a downturn in the project because this FY

#	Specific Objectives	Planned Project Outputs	Expected Progress	Remarks
		<p>equipment, ten (10) staff trained annually in techniques for metallurgical studies and evaluation for mining project prefeasibility studies, three (3) technical staff attached to established centers of excellence/ or institutions annually, seven (7) staff trained on ISO IEC 17025:2017: General requirements for the competence of testing and calibration laboratories annually, two (2) laboratory proficiency testing (PT) training for laboratory bench marking locally and internationally undertaken annually, and three (3) in-house training on occupational health and safety and best practices in laboratory operations for all laboratories staff undertaken.</p>		<p>2020/21 funding for staff training was cut; whereas this was the year most of the training was to be undertaken. Earlier in the project, there was not enough funding and therefore no postgraduate training in Chemistry and Metallurgy but some continuous professional development was undertaken. However, two chemists trained at postgraduate level through other project funding.</p>
4	<p>To develop analytical and mineral value addition methods for Uganda's mineral deposits through research and development and collaboration with the private sector</p>	<p>At least three (3) analytical and three (3) mineral value addition methods for Uganda's mineral deposits developed in collaboration with the private sector by June 2020.</p>	33%	<p>This was not undertaken since most of the entire time of the project laboratory equipment were not operational because of power supply problems. Therefore, development of both analytical and mineral beneficiation test techniques tailored for Ugandan minerals is pending and is to be undertaken once equipment are installed since standard power supply has been restored.</p>

#	Specific Objectives	Planned Project Outputs	Expected Progress	Remarks
5	To put in place systems and capabilities to monitor analytical and mineral value addition operations	Effective and efficient systems and capabilities to monitor operations of analytical and mineral value addition put in place by June 2020.	50%	The Laboratory Management Information System (LIMS) which was developed by a local consultant is now in use and improvements are being made. Pending is upgrading the system to be able to track mineral beneficiation operations in the country. This current Financial Year 2020/21 planned budget for Information and communication technology (ICT) was reduced by 50%. Therefore, not much is to be achieved.
6	To put in place mechanisms for the minerals laboratories to meet international standards (ISO Accreditation) and requirements for analytical laboratory testing	At least four (4) laboratory and test procedure meeting ISO certification requirements by June 2020.	36.3%	This is pending because most of the laboratory analytical techniques were not deployed the entire duration of the project because of power supply issues and therefore test of competences and applicability of Standard Operating Procedures (SOPs) which are key requirements for ISO Accreditation was not possible. This is to now commence once equipment have been re-installed since standard power supply has been installed. This shall be in time for both the services of an accreditation body to offer accreditation services for ISO/IEC 17025:2017 for testing and calibration laboratories, and a consultant to develop Quality System (QS), review documentation and train DGSM staff in preparation for ISO/IEC 17025:2017 accreditation.

#	Specific Objectives	Planned Project Outputs	Expected Progress	Remarks
				It is expected that once the accreditation body is contracted it should take at most two years for the laboratories to obtain accreditation.

6.2 STAFF PROMOTIONS

	Officer's Name	Previous Position	New Position
1.	Mr. Gariel Data	Principal Geologist/Exploration	Assistant Commissioner/Geology
2.	Mr. Chris Lubangaken	Principal Mineral Dresser	Assistant Commissioner/Laboratories
3.	Mr. Henry Ngada	Senior Staff Cartographer	Assistant Commissioner/Geodata
4.	Mr. Nelson Birungi	Geophysicist	Senior Geophysicist
5.	Mr. Henry Onyege	Chemist	Senior Chemist/Analytical
6.	Mr. Julius Kwezi	Laboratory Attendant	Chemist
7.	Ms. Nakiyimba Pauline	Appointed on promotion	Laboratory Technician

6.3 SEISMICITY OF UGANDA AND THE SURROUNDING REGION DURING THE PERIOD JUNE 2019 – JUNE 2020.

<i>Event Ser. No.</i>	<i>Date (Day/Month/Year)</i>	<i>Event Time UTC (HH:MM:SS)</i>	<i>Latitude (deg)</i>	<i>Longitude (deg)</i>	<i>Body Wave Magnitude (mb)</i>	<i>Focal Depth (km)</i>	<i>Geographical Region of Location (Place, Country)</i>
1	21/06/2020	13:56:49	-1.5499	28.6331	4.2	10	Sake, DR Congo
2	02/06/2020	05:44:13	-4.6442	35.8718	4.6	10	Kondoa, Tanzania
3	21/05/2020	12:57:33	-9.6571	23.9776	5.2	10	Kamina, DR Congo
4	09/05/2020	02:27:41	-8.7248	38.4182	4.1	10	Utete, Tanzania
5	03/05/2020	19:36:55	2.8247	36.0596	4.9	10	Lodwar, Kenya
6	24/04/2020	21:07:53	-3.4233	32.3783	4.5	10	Masumbwe, Tanzania
7	15/04/2020	13:40:48	-8.3559	38.597	4.7	10	Utete, Tanzania
8	13/03/2020	18:37:44	-4.8972	38.5527	4.9	15	Maramba, Tanzania
9	28/01/2020	22:32:06	-0.2296	29.7826	4.7	10	Rubirizi, Uganda
10	04/01/2020	20:00:56	-0.9727	23.7422	4.5	10	Yangambi, DR Congo
11	30/10/2019	20:55:27	-2.7974	28.4801	5.3	10	Kabare, DR Congo
12	12/10/2019	18:20:28	-4.8115	28.0962	4.6	10	Kongolo, DR Congo

13	09/09/2019	00:38:44	-6.4686	30.7664	5.5	10	Mpanda, Tanzania
14	06/09/2019	06:15:35	1.0391	30.3133	4.6	10	Ntoroko, Uganda
15	05/09/2019	23:04:57	-1.9889	27.1195	4.7	10	Kindu, D R Congo
16	05/09/2019	18:50:05	-1.9419	26.9352	5.0	10	Kindu, D R Congo
17	03/09/2019	19:21:34	-3.3156	28.5477	4.3	10	Uvira, D R Congo
18	20/08/2019	06:54:59	-4.169	36.7981	4.8	10	Naberera, Tanzania
19	06/08/2019	16:58:31	0.0359	30.1201	4.6	10	Kasese, Uganda
20	05/08/2019	09:37:13	-0.8796	29.4803	4.4	10	Ntungamo, Uganda
21	10/06/2019	06:59:37	-5.5008	29.4335	4.5	5	Kalemie, D R Congo
22	06/06/2019	07:01:08	-5.4327	35.9346	4.5	10	Kondoa, Tanzania
23	05/06/2019	23:13:49	-5.4027	35.9215	4.5	10	Kondoa, Tanzania

6.4 GEOTHERMAL POTENTIAL MAP OF UGANDA - GEOTHERMAL MANIFESTATIONS OVERLAIN ON GEOLOGY

