International Opportunities and Career Pathways for Geoscientists

JULY 1ST, 2024 7PM GMT -1

Join us for an insightful webinar exploring international opportunities and career pathways in the field of geosciences. Learn from experienced professionals about how to navigate your career in the global geoscience community.

Register Here
Be respectful and inclusive!

**SHOW RESPECT**
- Keep questions concise and on topic.
- Listen and seek to understand.
- Be kind. Critique ideas, not people – no bullying or harassment.

**BE INCLUSIVE**
- Show that you value diverse people and perspectives.
- Be welcoming – no exclusionary comments based on identity or other irrelevant factors.

**SPEAK UP OPENLY OR ANONYMOUSLY**
- **Mobile:** geosocietymobile.ethicspoint.com
- **Internet:** geosociety.ethicspoint.com
- **Phone:** 844-237-8688
- **Email:** ethics@geosociety.org
International Opportunities and Career Pathways for Geoscientists

Name: G. B. Sakyi-Addo
Company Name: Georgette Barnes Limited/Women In Mining Ghana
31 years in the West Africa Mining Sector
(An Exploration, Geological & Drilling supplies and service company)
Projected Growth in Demand

*Geoscience roles spanning mining, infrastructure, and energy sectors are expected to witness significant expansion by 2030. It is imperative that we equip our youth and bolster local capabilities to meet these burgeoning needs.

*Africa is projected to be the fastest-growing region for minerals and metals demand over the next decade (Source: S&P Report).

*Job openings in geology, engineering, and surveying across the African mining sector are forecasted to increase by over 50% (Source: AfCFTA).

*Major infrastructure projects worth $60 billion are planned across Mozambique, DRC, and Guinea, necessitating substantial geoscience input (Source: African Development Bank).

Efforts must be made to integrate earth science curriculum into primary and secondary schooling to ignite early interest. Moreover, tertiary programs should offer a balanced blend of theoretical knowledge and practical training

*Currently, only 35% of African primary schools teach earth science concepts, significantly below the global average of 45% (UNESCO Stats).

*Tertiary programs need to ensure that students receive hands-on fieldwork experience and exposure to mine sites relevant to Africa's geology. *Women represent only 15% of geologists in Africa compared to 28% globally (FAGEO)
## FORWARD THINKING

<table>
<thead>
<tr>
<th>No.</th>
<th>Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Harnessing Technological Advancements (Innovation: using Digital Tools, AI, Remote sensing etc.)</td>
</tr>
<tr>
<td>2</td>
<td>Promoting Sustainable Practices (Opportunities around: Environment, Climate Change, JET, Critical Minerals)</td>
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<tr>
<td>3</td>
<td>Fostering Diversity and Inclusion – gender, disadvantaged communities etc.</td>
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<td>4</td>
<td>INVEST IN THE SECTOR - Start a sector based business offering solutions, supplies etc. Value addition business.</td>
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<tr>
<td>5</td>
<td>Strengthening Collaboration: Look for opportunities beyond communities, national etc, extend beyond others</td>
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</table>
Conclusion

Africa has Natural Resources, Africa has people. We need to skill up and take up opportunities in this sector and this should be done with an inclusive approach.

1

2 Encouragement

Encourage collaboration and action-oriented plans.

3 Appreciation

Thanks for the opportunity.
References

1. The Future of Work in Mining" report by Deloitte, 2020


3. UNESCO Institute of Statistics database on Science Education, 2020

4. Elliott, Lauri et al. 2020. Trans Africa Invest, “Natural resources in Africa” (an extract from Grow rich in the new Africa.)
ENTREPRENEURSHIP OPPORTUNITIES FOR GEOLOGIST IN NIGERIA

MAKOJI ADEKO

JULY 2024
DISCUSSION POINTS

Entrepreneurship

The Earth

Geosciences and Data availability

Value Creation, Scales, And Measurements

Opportunities

Conclusions: Impediments to Growth

Are we Ready! Motivation
ENTREPRENEURSHIP

ENTERPRISE – A Company or Business Venture

ENTERPRISING – Showing the Ability to Think of New Projects or New Ways of Doing Things and Make Them Successful

ENTREPRENEUR – A Person Who Makes Money by Starting or Running Businesses, Especially when this Means Taking a Financial Risk
THE EARTH

Nearly Everything on the Surface of the Earth came from Inside the Earth

Only the Geologist Possibly Knows All the Things Inside the Earth

Just Observe Everything Around You

The Characters of the Earth – Basement Rocks & Basins
GEOLOGICAL MAP OF NIGERIA
MINERAL RESOURCES
MAP OF NIGERIA
NIGERIAN SEDIMENTARY BASINS WITH BITUMEN, OIL AND GAS ACTIVITIES
Geological Training is Focused on Qualifying the Objectives and Quantifying the Deposits

Origin, Occurrence, Chemistry, Volume, Types, Uses

How Much is it Worth, Who Needs it, Markets, Utility, Value Creation
VALUE CREATION, SCALES & MEASUREMENTS

What are Tons, Grams, Carats, Linear, Square & Cubic Meters, Specific Gravity, etc.

What are the Value and Daily Price Quotes for Minerals

What are Value Additions and Beneficiation of Minerals

What are the sizes of Opportunities and Entry Points
WHERE ARE THE OPPORTUNITIES

1. **Industrial Minerals** – Limestone, Gypsum, Dimension Stones, Barites, Mica, Kaolin, Talc,
2. **Metallics** – Gold, Iron Ore, Tin, Tantalite, Lead, Zinc, Wolframites, Nickel
3. **Battery Minerals and REE** – Lithium, etc
4. **Coal, Oil & Gas** – Coal, Bitumen, Heavy Oil, Crude Oil and Gas
5. **Water** – Hydro Resources, Dams, Boreholes
6. **Gemstones** – Sapphire, Emeralds, Tourmaline

DO YOU WISH TO LEAD OR BE A FOLLOWER?
### Nigerian Strategic Minerals

#### Strategic Minerals

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Estimate</th>
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<tbody>
<tr>
<td>Bitumen Reserves Estimate</td>
<td>42 billion barrels</td>
</tr>
<tr>
<td>Gold Reserves Estimate</td>
<td>50,000 ounces</td>
</tr>
<tr>
<td>Iron Ore Reserves Estimate</td>
<td>3 billion mt</td>
</tr>
<tr>
<td>Coal Reserves Estimate</td>
<td>600 million tons</td>
</tr>
<tr>
<td>Lead / Zinc Reserves Estimate</td>
<td>10 million mt</td>
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<tr>
<td>Baryte Reserves Estimate</td>
<td>7.5 million tons</td>
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<tr>
<td>Limestone Reserves Estimate</td>
<td>568 million tons</td>
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</tbody>
</table>

#### Other Minerals

- Manganese
- Titanium
- Gypsum
- Niobium
- Copper
- Nickel
- Phosphate
- Chromium
- Tantalite
- Kaolin

INDUSTRIAL MINERALS

DEMAND AND SUPPLY OVERVIEW
<table>
<thead>
<tr>
<th>Industry</th>
<th>Uses</th>
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<tbody>
<tr>
<td>Construction</td>
<td>Gypsum (cement production and plasters)</td>
</tr>
<tr>
<td></td>
<td>Dimension stones</td>
</tr>
<tr>
<td></td>
<td>Lime (hydrated and quick)</td>
</tr>
<tr>
<td>Steel</td>
<td>Quartz</td>
</tr>
<tr>
<td></td>
<td>Calcium carbonate</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>Mica</td>
</tr>
<tr>
<td></td>
<td>Bentonite</td>
</tr>
<tr>
<td></td>
<td>Baryte</td>
</tr>
<tr>
<td></td>
<td>Calcium carbonate</td>
</tr>
<tr>
<td>Water Treatment</td>
<td>Calcium carbonate</td>
</tr>
<tr>
<td></td>
<td>Lime</td>
</tr>
<tr>
<td>Other industries</td>
<td>Calcium carbonate</td>
</tr>
<tr>
<td></td>
<td>Mica</td>
</tr>
<tr>
<td></td>
<td>Titanium dioxide</td>
</tr>
<tr>
<td></td>
<td>Talc</td>
</tr>
<tr>
<td></td>
<td>Quartz</td>
</tr>
<tr>
<td></td>
<td>Kaolin</td>
</tr>
<tr>
<td></td>
<td>Lime (hydrated and quick)</td>
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</tbody>
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## INDUSTRIAL MINERALS DEMAND / GAP ANALYSIS (MINE DIVER JANUARY 2018)

<table>
<thead>
<tr>
<th>Imports in weight (total 614,605t)</th>
<th>Imports in value (total 46,330,620 US$)</th>
</tr>
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<tbody>
<tr>
<td>Gypsum (83.7%)</td>
<td>Calcium carbonate (25.4%)</td>
</tr>
<tr>
<td><strong>Calcium carbonate (8.4%)</strong></td>
<td>Mica (20.3%)</td>
</tr>
<tr>
<td>Titanium dioxide (1.3%)</td>
<td>Titanium dioxide (15.7%)</td>
</tr>
<tr>
<td><strong>Quick Lime (1.2%)</strong></td>
<td>Dimension stones (granite &amp; marble; 12.5%)</td>
</tr>
<tr>
<td>Quartz (1.0%)</td>
<td>Gypsum (9.1%)</td>
</tr>
<tr>
<td>Kaolin (0.7%)</td>
<td>Talc (3.9%)</td>
</tr>
<tr>
<td>Bentonite (0.7%)</td>
<td>Baryte (3.6%)</td>
</tr>
<tr>
<td><strong>Hydrated Lime (0.6%)</strong></td>
<td><strong>Quick Lime (2.1%)</strong></td>
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CONCLUSIONS
(BY ENG. UMAR A. HASSAN)
Mine Diver (January 2018)

◆ The Demand-Gap analysis of Industrial Minerals required by Nigerian Industries has established:

✓ The existence of gaps in the local production of industrial minerals required by the local industries evidenced by the annual importation of about 626,921tpa of mostly non-construction industrial minerals, granite and marble blocks costing about $44.5m despite reported existence of local resources evidenced from the existence of mining and quarry leases granted by the MCO covering these minerals.

✓ That local industrial mineral producers produce mostly crude and semi-processed products which do not meet the required specifications arising from challenges in accessing available financing windows, lack of necessary mineral process equipment's, amongst others.

✓ Gaps in local production of derived industrial mineral products like lime, hydrated lime, POP and pottery works, amongst others.

✓ The need for MinDiver to support local producers to produce required industrial minerals and derived industrial mineral products that meet required specifications.
Nigeria’s bitumen resources span across four states classified into 3 major blocks with probable reserve estimate of at least 42 billion barrels.
RECENT GAS FLARE AT ENUGU FROM A 294METRE WELL DRILLED FOR WATER
CONCLUSION: IMPEDIMENTS TO GROWTH

- Entrepreneurship
- Exploration and Bankable Opportunities
- Technology & Skills Set
- Operating Environment
- Access to Finance
- Logistics to Markets
- Confidence & Staying Power
ARE WE READY!

- The Road May be Rough
- The Value Proposition May be Right
- What Ways are you Inspired to New Thinking
- A Geological Background As an Access
- Are We Ready for the Entrepreneurship Trip of a Life Time...
THANKS

MAKOJI ADUKU