

## International Opportunities and Career Pathways for Geoscientists

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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.



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OF AMERICA®**

# 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](https://geosocietymobile.ethicspoint.com)

**Internet:** [geosociety.ethicspoint.com](https://geosociety.ethicspoint.com)

**Phone:** 844-237-8688

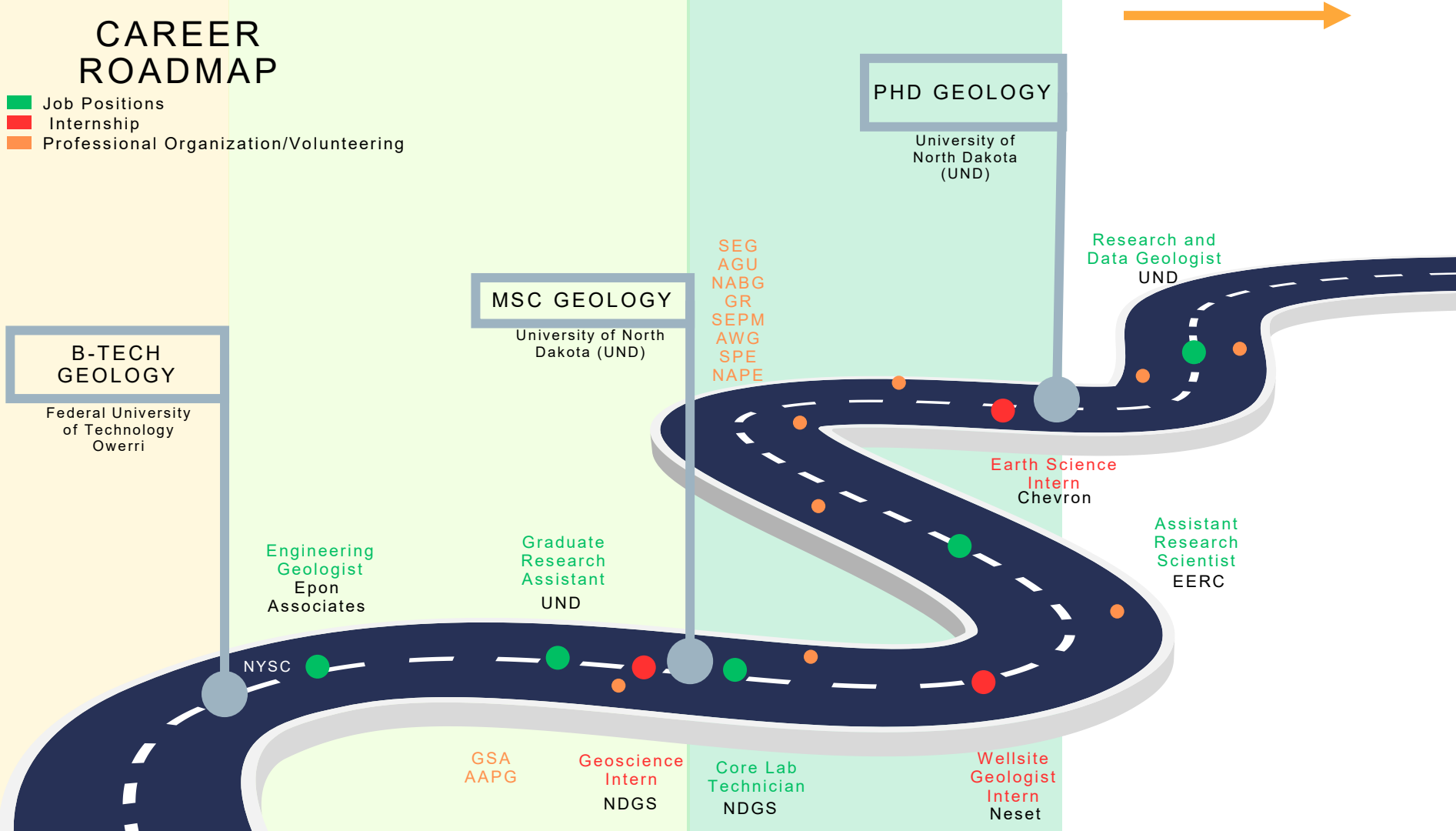
**Email:** [ethics@geosociety.org](mailto:ethics@geosociety.org)





# CAREER ROADMAP

- Job Positions
- Internship
- Professional Organization/Volunteering



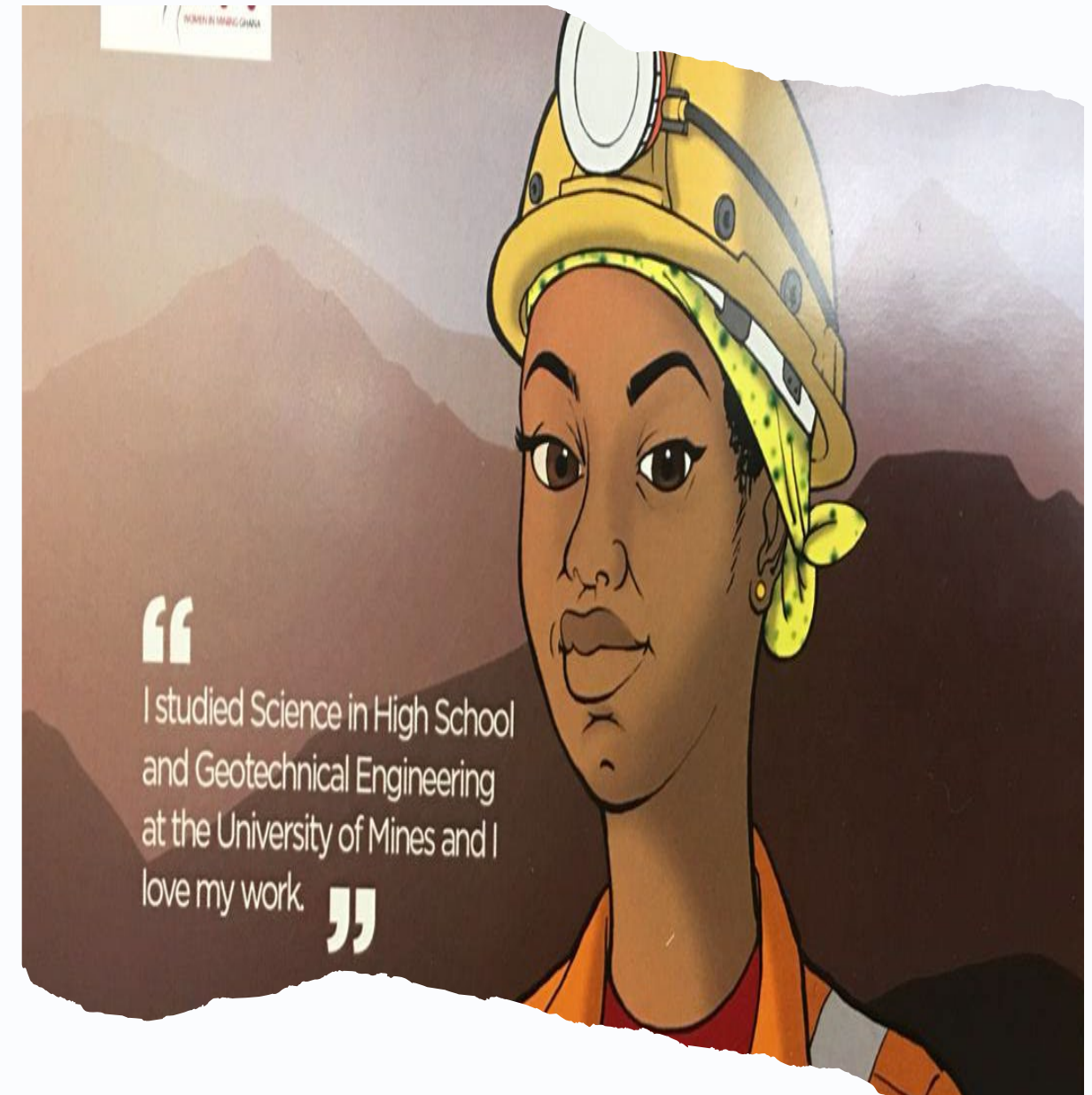
# International Opportunities and Career Pathways for Geoscientists

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

1

Harnessing Technological Advancements(Innovation: using Digital Tools, AI, Remote sensing etc.)

2

Promoting Sustainable Practices (Opportunities around: Environment, Climate Change, JET, Critical Minerals)

3

Fostering Diversity and Inclusion – gender, disadvantaged communities etc.)

4

INVEST IN THE SECTOR  
- Start a sector based business offering solutions, supplies etc. Value addition business.

5

Strengthening Collaboration: Look for opportunities beyond communities, national etc, extend beyond borders)





# Conclusion

## Conclusion

1

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.

2

## Encouragement

Encourage collaboration and action-oriented plans.

3

## Appreciation

Thanks for the opportunity.



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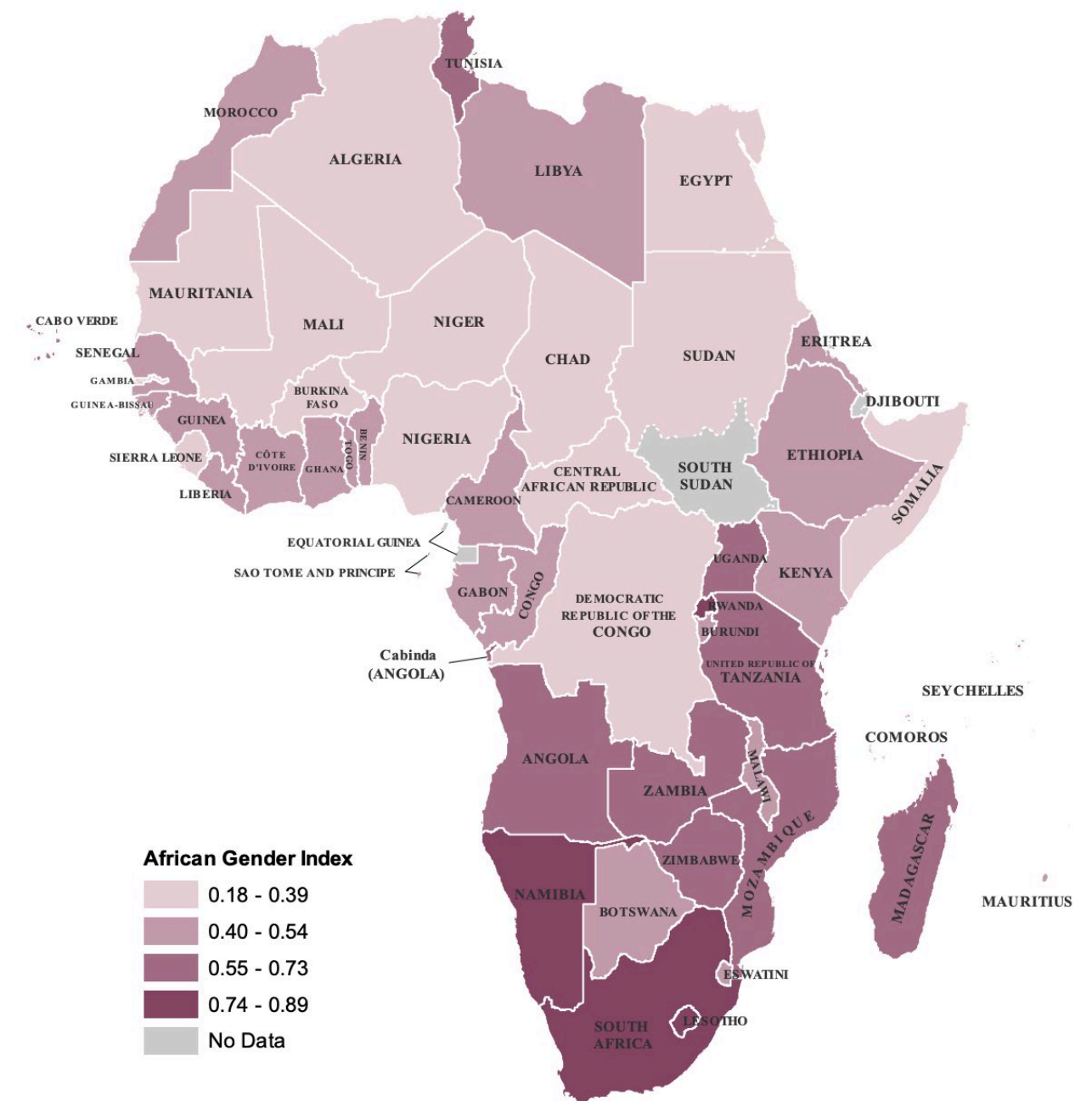
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# ENTREPRENEURSHIP OPPORTUNITIES FOR GEOSCIENTIST IN NIGERIA

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**MAKOJI ADUKU**

JULY 2024



# DISCUSSION POINTS

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Entrepreneurship

The Earth

Geosciences and  
Data availability

Value Creation,  
Scales, And  
Measurements

Opportunities

Conclusions:  
Impediments to  
Growth

Are we Ready!  
Motivation



ENTERPRISE – A Company or Business Venture

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## ENTREPRENEURSHIP



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

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

Just Observe  
Everything Around  
You

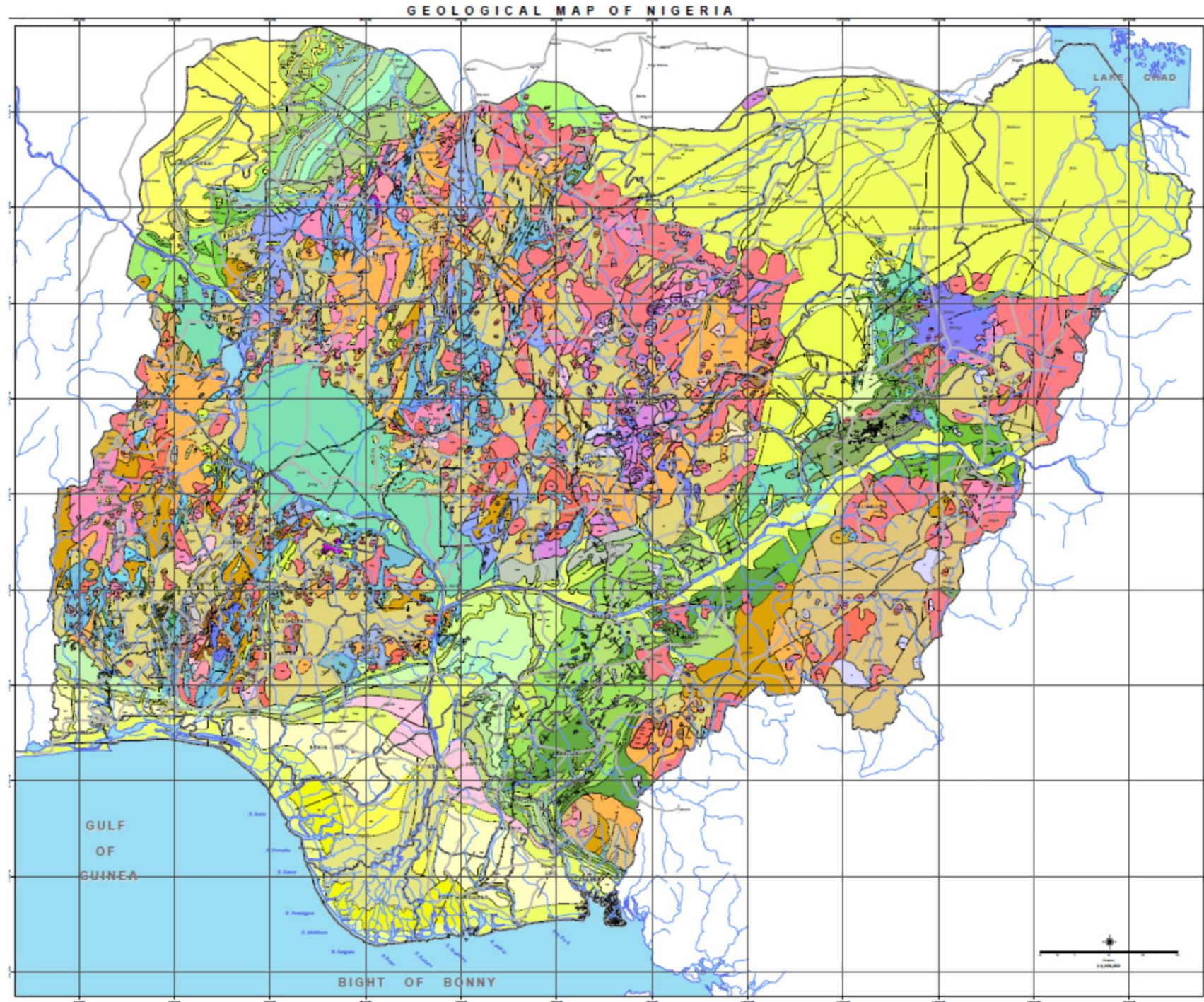
Only the Geologist  
Possibly Knows All  
the Things Inside the  
Earth

The Characters of  
the Earth –  
Basement Rocks &  
Basins



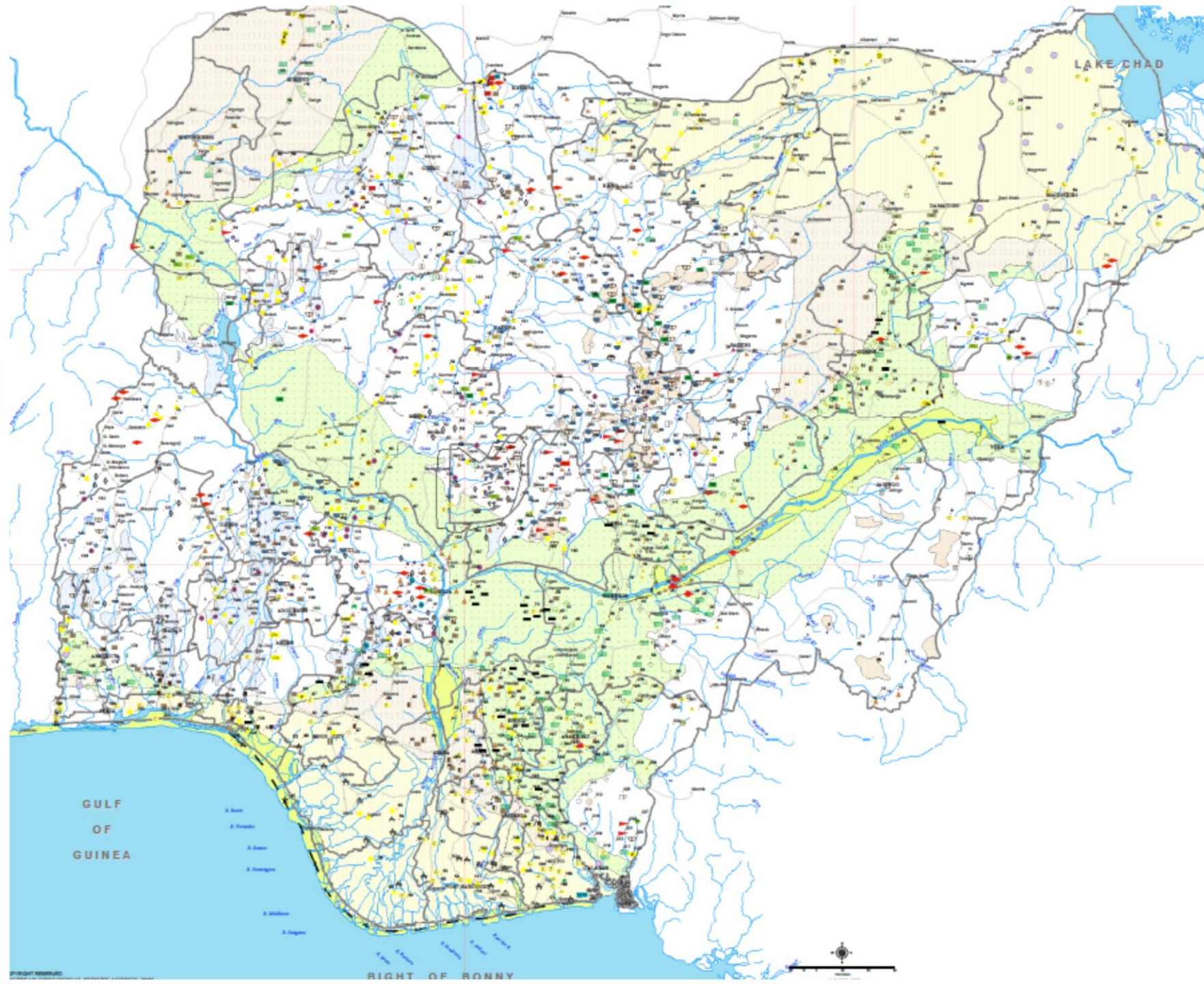


# GEOLOGICAL MAP OF NIGERIA



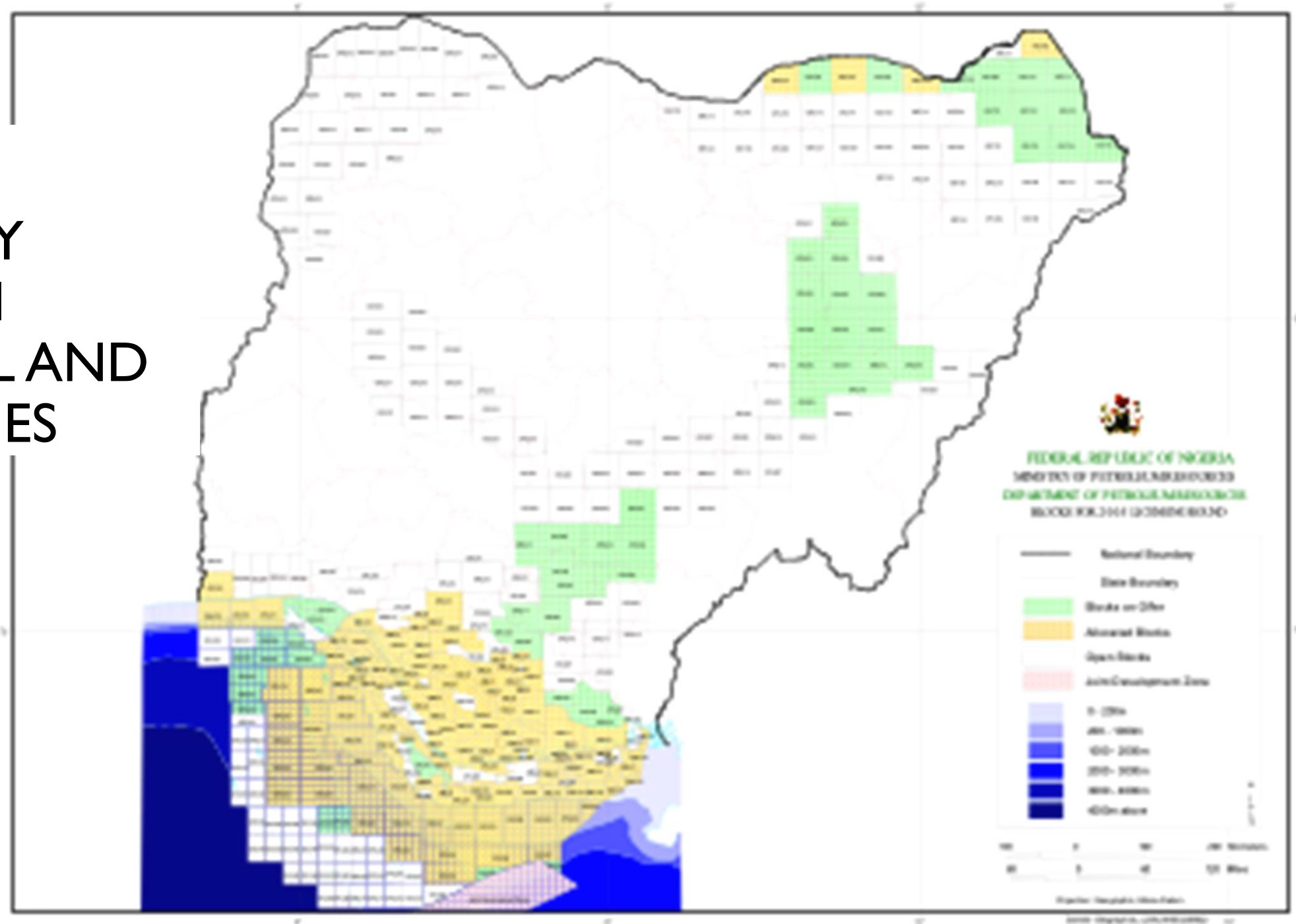


# MINERAL RESOURCES MAP OF NIGERIA





# NIGERIAN SEDIMENTARY BASINS WITH BITUMEN, OIL AND GAS ACTIVITIES



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## GEOSCIENCES AND DATA AVAILABILITY



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

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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

### DO YOU WISH TO LEAD OR BE A FOLLOWER?

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

# NIGERIAN STRATEGIC MINERALS

## Strategic Minerals

Bitumen Reserves  
Estimate

42 billion barrels

Gold Reserves  
Estimate

50,000 ounces

Iron Ore Reserves  
Estimate

3 billion mt

Coal Reserves  
Estimate

600 million tons

Lead / Zinc  
Reserves Estimate

10 million mt

Baryte Reserves  
Estimate

7.5 million tons

Limestone Reserves Estimate

568 million tons

## Other Minerals

Manganese

Titanium

Gypsum

Niobium

Copper

Nickel

Phosphate

Chromium

Tantalite

Kaolin

Source: BP Statistical Bulletin, EITI, Mining Technology, Nigerian Mineral Roadmap 2015 and MMSD



# INDUSTRIAL MINERALS

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DEMAND AND SUPPLY OVERVIEW



# INDUSTRIAL MINERALS USAGE

(MINE DIVER JANUARY 2018)

<b>Construction</b>	Gypsum (cement production and plasters) <b>Dimension stones</b> Lime (hydrated and quick)
<b>Steel</b>	Quartz <b>Calcium carbonate</b>
<b>Oil &amp; Gas</b>	Mica Bentonite Baryte <b>Calcium carbonate</b>
<b>Water Treatment</b>	<b>Calcium carbonate</b> Lime
<b>Other industries</b> (e.g. paper, ceramics, paints, water treatment)	<b>Calcium carbonate</b> Mica Titanium dioxide Talc Quartz Kaolin <b>Lime (hydrated and quick)</b>



# INDUSTRIAL MINERALS DEMAND /GAP ANALYSIS

(MINE DIVER JANUARY 2018)

Imports in weight (total 614,605t)	Imports in value (total 46,330,620 US\$)
Gypsum (83.7%)	<b>Calcium carbonate (25.4%)</b>
<b>Calcium carbonate (8.4%)</b>	Mica (20.3%)
Titanium dioxide (1.3%)	Titanium dioxide (15.7%)
<b>Quick Lime (1.2%)</b>	<b>Dimension stones (granite &amp; marble; 12.5%)</b>
Quartz (1.0%)	Gypsum (9.1%)
Kaolin (0.7%)	Talc (3.9%)
Bentonite (0.7%)	Baryte (3.6%)
<b>Hydrated Lime (0.6%)</b>	<b>Quick Lime (2.1%)</b>

## **CONCLUSIONS**

(BY ENG. UMAR A. HASSAN)  
Mine Diver (January 2018)

- ◆ **The Demand-Gap analysis of 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.**

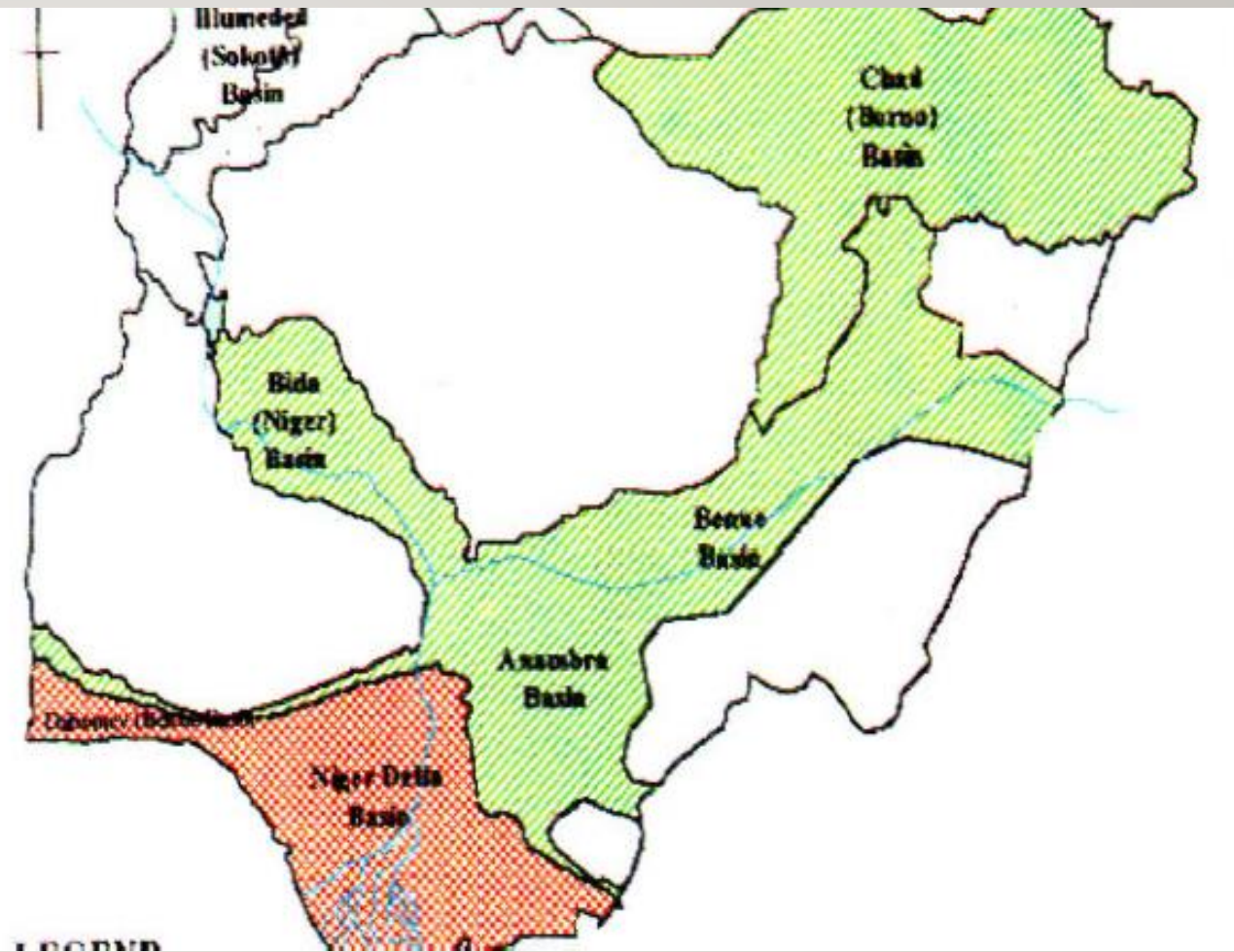
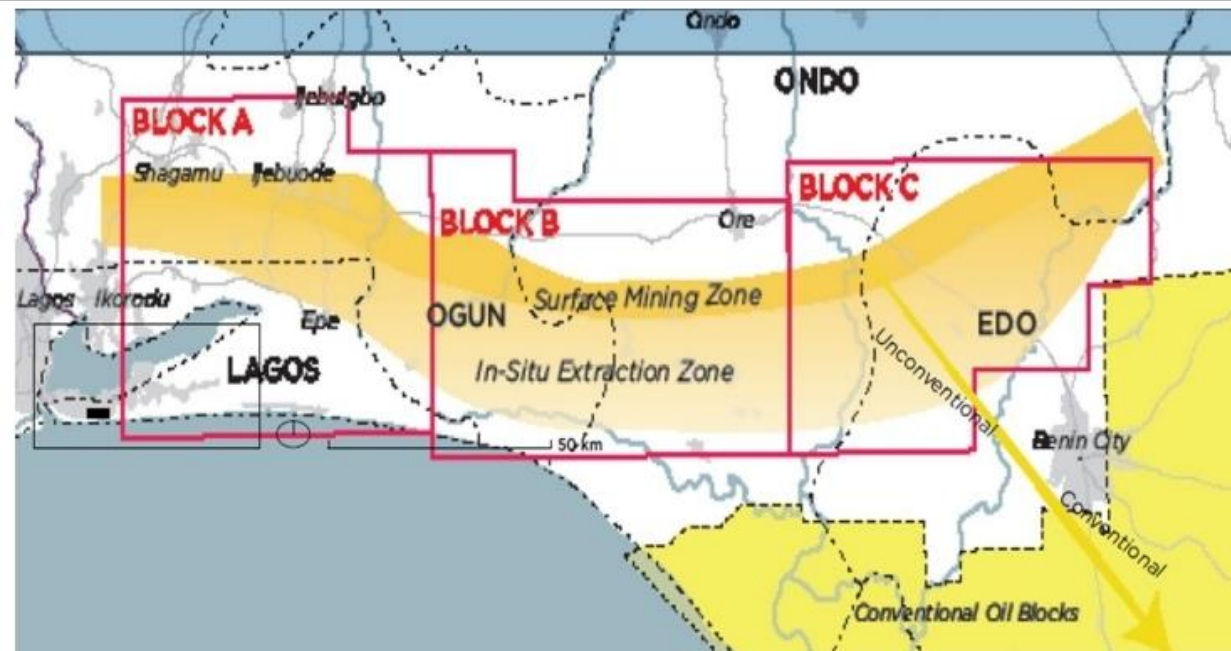


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BITUMEN, OIL & GAS



Nigeria's bitumen resources span across four states classified into 3 major blocks with probable reserve estimate of at least 42 billion barrels



BITUMEN, OIL & GAS OPPORTUNITIES IN THE INLAND BASINS OF NIGERIA





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RECENT GAS FLARE  
AT ENUGU FROM A  
294METRE WELL  
DRILLED FOR WATER

# CONCLUSION: IMPEDIMENTS TO GROWTH

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Entrepreneurship



Exploration and  
Bankable  
Opportunities



Technology & Skills  
Set



Operating  
Environment



Access to Finance



Logistics to Markets



Confidence &  
Staying Power



# ARE WE READY!

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- 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

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MAKOJI ADUKU

