

FRONTIER BASINS, ECONOMIC INDICATORS, TERRORISM, ENERGY, AGRICULTURE AND MEDICINE

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OUTLINE

- Introduction
- List of Frontier Basins
- Results of Exploration
- Energy Candidates
- Medical Opportunities/Agriculture/Ranching
- Impacts of Terrorism
- Limestone Deposits/Cement Industries
- Conclusions

INTRODUCTION

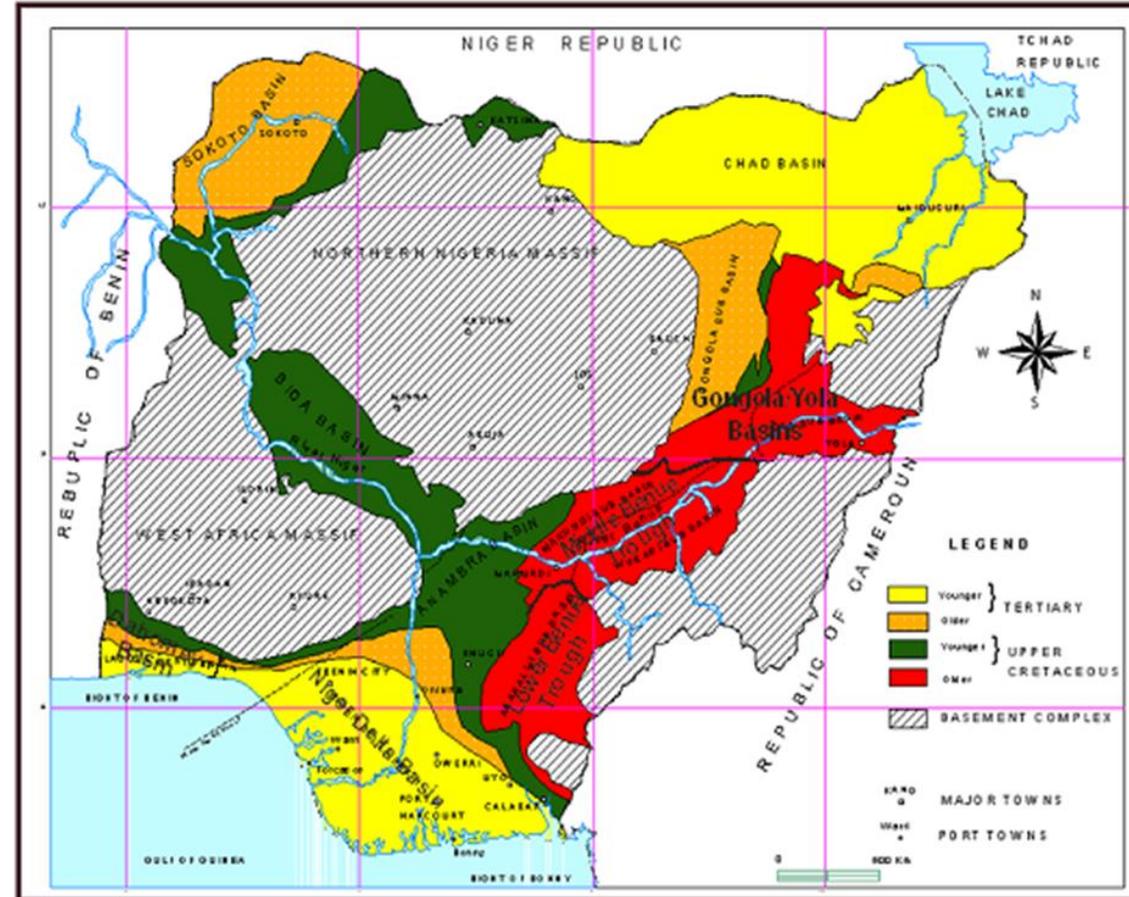
SIX UNSTOPPABLE GLOBAL TRENDS

- ENERGY
- SCARCITY
- MEDICINE
- TECHNOLOGY
- WAR, TERRORISM AND UGLINESS
- DEMOGRAPHICS

LIST OF FRONTIER BASINS

- ANAMBRA BASIN
- BENUE TROUGH
- BIDA BASIN
- CHAD BASIN
- DAHOMEY BASIN
- GONGOLA/YOLA BASIN
- SOKOTO BASIN

Map of Nigerian Frontier Basins



RESULT OF EXPLORATION IN THE CHAD BASIN AND BENUE TROUGH Continues.....

CHAD BASIN

1970-2006

- Exploration commenced in 1976 and continued till 1996
- 33,000 km of 2D Seismic data were acquired, processed and interpreted
- 23 wells were drilled.
- Two (2) wells (Wadi-1 & Kinasar-1) recorded non commercial gas.
- Three (3) prospective sub-basins (Gubio, Maiduguri & Baga / Lake Area) identified.

RESULT OF EXPLORATION IN THE CHAD BASIN AND BENUE TROUGH Continues.....

CHAD BASIN:

2008 - 2017

- 1,962.20 km² 3D Seismic data acquired, processed and interpreted
- 2014 Seismic Acquisition Operations suspended due to insurgency
- Prospects / leads identified from interpreted Phases 1-8 seismic data
- De-risking identified leads/prospects via Surface Geochemistry Studies: **Ongoing**
- Petroleum system re-evaluation, aimed at de-risking source and maturity: **Ongoing**
- Security Risk evaluation has commenced to recommend the best way of re-entry
- Contracting Process for Long Lead Items, Rig sourcing and Ancillary services have been completed. Some contracts have been awarded and some are at advanced stages.

RESULT OF EXPLORATION IN THE CHAD BASIN AND BENUE TROUGH CONTINUES.....

BENUE TROUGH

1996-2001

- Earliest exploration was conducted by **SNEPCo, Chevron** and **Elf** under different PSC Agreements.
- 3,153 km of 2D seismic data was acquired, processed and interpreted.
- Three (3) exploratory wells were drilled (Kolmani River-1, encountered **33Bcf** of gas – adjudged non-commercial, Nasara-1 and Kuzari-1 were classified as dry wells).

2009-2018

- Completed G & G Field mapping, aeromagnetic & gravity data interpretation and Integration
- Completed Surface Geochemistry sampling, ground gravity & remote sensing studies.
- 3D seismic data acquisition/processing/interpretation planned/being carried out over Kolmani, Kuzari & Nasara prospects to appriase earlier exploration drilling carried out by SNEPCo, Chevron and Elf.

ENERGY CANDIDATES – CHAD BASIN

- 5m Thorium bearing beds in the Fika Shale were identified from cores obtained from Wadi-1.
- Core studies were carried out at Agip Research Facility in Milan, Italy.
- Thorium like Uranium can be used to fuel a nuclear chain reaction that can run a power plant and generate electricity.

ENERGY CANDIDATES – BENUE TROUGH

- The 33BSCF Encountered In Kolmani River-1 could be used to generate 18MW of electricity over a period of 20years.
- Electricity generated at Kolmani River-1 could be transmitted to nearby towns or by virtual pipeline, to stimulate economic activities in the area.

ENERGY CANDIDATES - THORIUM AS A NUCLEAR FUEL

- Thorium is a weakly radioactive metallic chemical element with symbol Th and atomic number 90.
- Thorium itself will not split and release energy.
- When exposed to neutrons, it changes into an isotope of Uranium called U-233 which will readily split and release energy when it absorbs another neutron.
- Thorium is therefore called fertile whereas U-233 is called fissile.
- Majority of reactors use enriched uranium (U-235) or reprocessed plutonium (Pu-239) as fuel (in the Uranium-Plutonium cycle).
- Only a few reactors currently developed in China and India are operating on the Thorium-Uranium (Th-U) cycle.

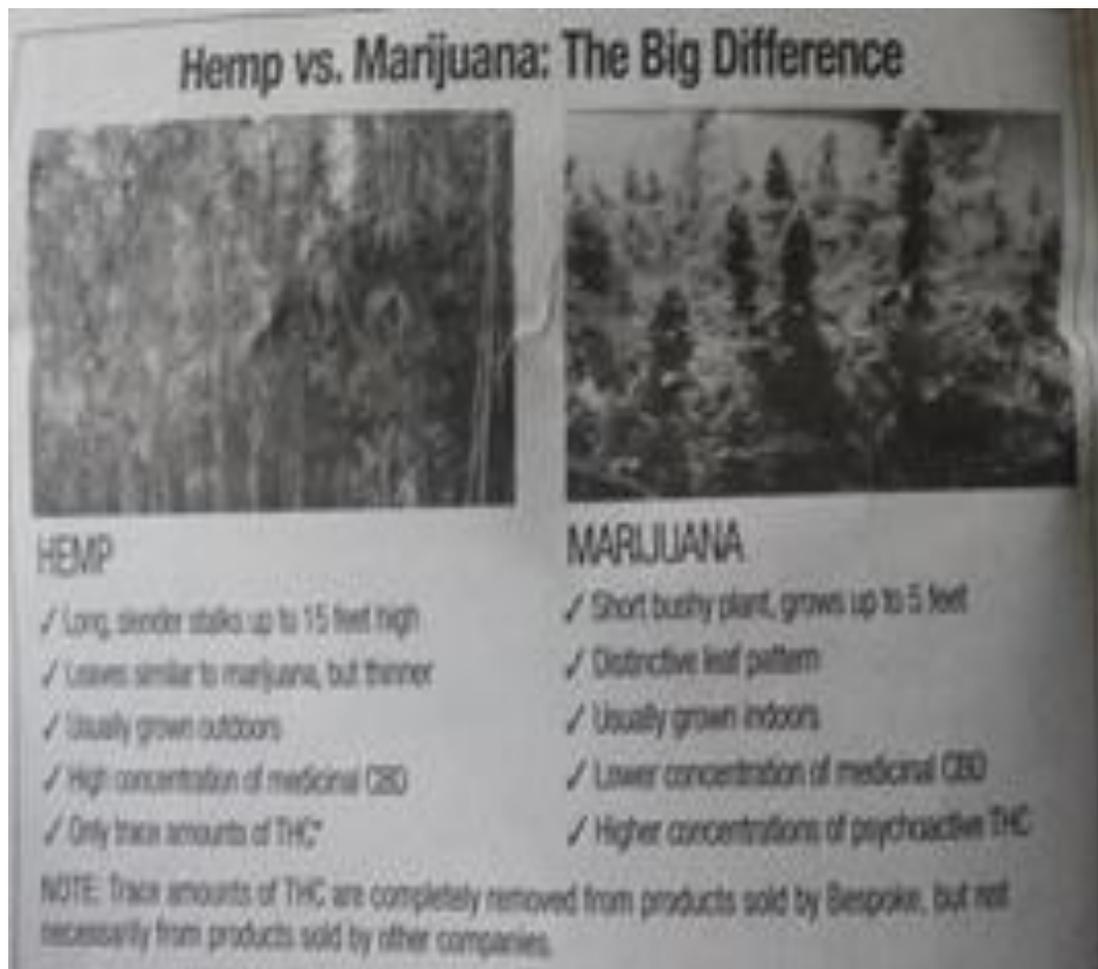
KEY BENEFITS OF THORIUM

- Used Thorium fuel can be reprocessed without mining any additional U-235 for reactivity boosts.
- The Th-U does not irradiate Uranium-238 and therefore does not produce transuranium (bigger than uranium) atoms like Plutonium, Americium, Cesium etc. These transuranics are the major health concern of long-term nuclear waste. Thus, Th-U waste will be less toxic on the 10,000+ year time scale.
- Thorium is more abundant in earth's crust than uranium at a concentration of 0.0006% vs 0.00018% for uranium (factor of 3.3x)

MEDICAL / AGRICULTURAL OPPORTUNITIES

- Surface areas in the frontier basins have good agricultural potentials for cash crops.
- In the eastern part of the Dahomey basin is the town of Ilesha and environs where both Indian hemp and marijuana are cultivated.
- These two crops that are medically important are criminalised by NDLEA.
- There is a marked difference between both crops.

Hemp Vs Marijuana.....



- **Cannabidiol (CBD)** is the non-psychoactive component of cannabis and hemp.
- **Tetrahydrocannabinol (THC)** does induce a “high” but has many clinical benefits which includes control of seizures and pains
- **CBD oil** is a non-toxic pain relief
- **CBD Oil** is one of the most effective natural pain killers which are a better alternative to Opioid pills (like Percocet, Oxycontin, Vicodine, Codeine) and other dangerous Opioid taken by adults and seniors when they experience chronic pains.
- The harmful side effects of these pain killers include:
 - * Nausea
 - * Vomiting
 - * Dizziness
 - * Respiratory depression.
 - * Constipation

Hemp vs Marijuana.....

- Also, think of hemp as nature's plastic.
- Virtually anything that's made of today's synthetic fibre can be made from hemp.
- In Europe, so much of what was once plastic, they now use hemp
- Car panelling is now made from hemp
- Indeed there are hundreds / thousands of uses to which hemp can be used.
- Problem: Hemp has been outlawed for over 50 years in Nigeria.
- Though it can get you high, it could solve many of the nation's farm and environmental woes and spark a boom of prosperity in the states.....the folks in charge have made it illegal to grow hemp within Nigeria's borders. Reason, it's difficult to tell what hemp is and what marijuana is. NDLEA fear that people will be able to grow marijuana along with hemp. They want to ensure anybody who grew either plant is arrested to avoid the trick of planting one in place of the other.
- Nigeria greatest cash crop was poured into a tub of ignorance and tossed out with the bathwater. Hemp will become a crop like corn, wheat and soybeans in the Biggest Trade of the Decade.
- In the United States CBD sales is expected to grow to \$1.6billion by the year 2020. If Nigeria gets part of this expected income say 10%, it would be a new revenue stream into the Nigeria economy.

Hemp vs Marijuana.....

COUNTRIES THAT HAVE LEGALISED / DECRIMINALISED CANNABIS

- * USA
- * Italy
- * France
- * Canada
- * Netherlands
- * Russia
- * Mexico
- * Portugal
- * Brazil
- * Spain
- * Argentina
- * Belize
- * Jamaica
- * Switzerland
- * Aruba
- * Croatia
- * Colombia
- * Czech Republic
- * Ecuador
- * Estonia
- * Peru
- * Uruguay
- * Ukraine
- * Cambodia
- * Australia
- * Britain
- * Laos
- * Germany
- * Belgium

- A total of Twenty Nine (29) Countries Worldwide.

Hemp vs Marijuana.....

REVENUE STREAM

- An average price of \$2,200 per kilogram of medical cannabis is obtained in the USA.
- An acre of medical cannabis in the USA can yield as much as \$800,000
=N=280,000,000 (Two Hundred and Eighty Million Naira) @=N=350/\$.

RANCHING / FARMING IN THE CHAD BASIN

- 23 water wells were drilled to service the 23 exploration wells drilled in the Chad basin.
- These water wells are artesian fuelled by pressurized sandstone lenses in the Chad formation.
- The water wells were used to condition the muds used for drilling.
- A typical water well can either be used to provide water for a ranch or to build a corn farm.
- 13 of the water wells could be used as the nuclei for ranches / watering holes for nomadic cattle rearers .
- 10 of the water wells could be used to establish corn farms that are three kilometres in diameters serviced with water sprinklers that are adjustable in height to accommodate the growth of the corn plant.
- The produced corn will be processed into corn oil that can satisfy Nigeria's corn oil requirements

TERRORISM

IMPACT OF TERRORISM

- Displacement of populace to IDP camps
- Resultant manpower depletion for farming and other labour intensive activities
- Hence cessation of economic activities (mainly farming) resulting in atrophied GDP growth
- Security of water wells to discourage insecurity
- Illegal weaponization of the populace resulting in the proliferation of small arms.

LIMESTONE DEPOSIT / CEMENT INDUSTRIES

- Limited exploration activities in the Sokoto basin, Ashaka in the Gombe area of Benue Trough and Ewekoro / Ibeshe area of the eastern Dahomey basin where limestones are the feedstock materials for cement manufacturing.
- The limestone can also be used as a building stone; for road construction; purification of molten glass; removal of impurities from molten iron; a filler and abrasive in toothpastes and as a paint additive.

CONCLUSIONS / RECOMMENDATIONS

- Presentation has been based mainly on activities of NNPC with inputs from some multinationals.
- It is recommended that:
 1. The gas to power unit of NNPC should exploit the gas discovered at Kolmani River-1 for power generation.
 2. Determine the extent of thorium beds in the Chad Basin and its suitability for the requirements of the Nigerian Atomic Energy Commission.
 3. Prevail on government to decriminalise both marijuana and hemp with a view to developing the medical marijuana industry.
 4. The military should secure all water wells in the Chad basin to deny terrorists access to water.