GEOLOGY and MINERAL RESOURCES OF ETHIOPIA

Presented By Hundie Melka, GSE at China Mining Conference 2016
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Outline of Presentation

1. Introduction
2. Geo-Science data coverage
3. Geology and Mineral Potential
4. Conclusion
1. Introduction

Location: - East Africa (latitude $3^\circ$ N - $15^\circ$N & longitude $33^\circ$E - $48^\circ$E

Surface Area: - $1.14 \ M \ km^2$

Population: - over 85 million

Administration: - Federal System (9 regional states & 2 City Admin.)

Economy - Agricultural country with $>80\%$ of the population live on farming

Export -

Agriculture - mainly coffee, oil seed, flower, leather etc.

Mining - gold, tantalite, gemstones & dimension stones
2. Geoscience Data Coverage

Regional Geological Map Coverage 1: 250,000 Scale
94 % of the land mass of Ethiopia
Geochemical Survey coverage is only 4% of the country
Airborne geophysical Survey Coverage is 30%

Regional Ground Gravity at 1:500,000 Scale - 100% of the country

N.B
This map doesn't include areas flown after 2002 for mineral and petroleum explorations.
3. Geology and Mineral Potential of Ethiopia

Geology

underlain by rocks of Precambrian to recent

- Precambrian covers 25% (low-grade volcano-sedimentary rocks, high grade rocks and mafic to felsic intrusives)
- Palaeozoic – few places
- Mesozoic sed. Rocks- 25%
- Cenozoic volc. & sed. 50%
  - Highland Tertiary volcanics (basalts)
  - Tertiary as well as Quaternary volcanics & sediments of the rift valley

- Quaternary sediments & volcanics different parts of Ethiopia
Mineral Potential

Western & SWBelt:-
• Tulu Kape, Dul, Metekel, Chamo, Oda- Godere Pri. Au deposits &
• Yubdo Platnium deposit
• Bikilal, Chago, Gordana, Sirba & Kore iron deposits & mineralization
• Keta & Abetselo Base metals Mineraliz.
• Fakusho Molybdenum mineraliz.
• Placer Gold deposits

Southern Belt:- Adola & Moyale
• Lege – Dembi, Sakaro, Moyale, Dawa, Okote Primary Gold deposits & occur.
• Adola Nickel
• Kenticha Tanatalum
• Placer gold deposits
• Chromite mineralization

Northern Belt:-
• Terkemti, Adi Zersenay, zager
• Primary gold mineralization
• Base Metals mineralization
• Placer gold occurrences & deposits
Industrial Minerals

Cement Raw Minerals:
LST, Gyp, Cly, Pumice - M tones

Fertilizer Raw Minerals:
Potash - billion tones & phosphate - 181 Mt

Ceramics Raw Minerals:
Kaolin - 20 Mt, Feldspar - 500000 t,
Qtz - 400000 t

Glass Raw Minerals
Silica Sand - more than 3.4 Mt,

Dimension Stones:
Marble, Granite, Lst, SS - in Mt

Diatomite - 120 Mt, Bentonite - 172 Mt
Soda ash - 460 Mt, Salt - 4.3 Bt,
Graphit - 460000 t, Sulfur - 6 Mt, Talc - 120000 t, kayanite - 10 Mt

Gemstones:
Opal, Emerald, Sapphire, ruby Peridot, Tourmaline, garnet
A) Geothermal Potential

- In the Ethiopian Rift Valley
- More than 10,000MW for power generation
- More than 22 geothermal Fields identified
- Two of the Fields (Aluto Langano & Tendaho) are at detailed stage
B) Coal—more than 500 mt

- Kunzela & Chilga
- Debre Libanos & Mugher
- Nejo
- Geba, Arjo
- Delbi, Moye, Yayu
- Wucahle
- Mush Valley
- Hunda Bilisuma, Meiso/Harar
- Morca, Walayta-Sodo

Oil Shale – 1 billion tones
C) Petroleum Potential

The Discovery to date is mainly for natural gas in the Ogaden basin estimated around 6 TCF.
Conclusion

The Geological Setup of Ethiopia is diverse and attractive:-

- For mineral exploration and development operations
- For Potential investor & research in the fields of geoscience
- The investment environment is also attractive
  - Competitive legal framework
  - Commitment of government to support investment
  - Adequate infrastructure
  - Political stability

Potential Investors and researchers are welcome to operate for mutual benefit
Geological Survey of Ethiopia

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THANK YOU