


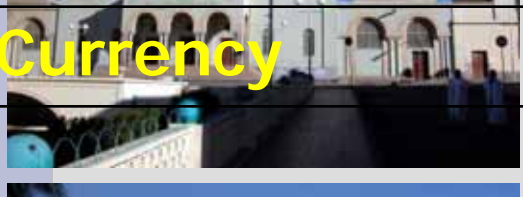



# Eritrea's Mineral Sector Potentials and opportunities



**Presented by Tesfai Ghebreselassie  
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# The State of Eritrea

 <b>Area</b>	124,000 km <sup>2</sup> including about 350 Red Sea islands
 <b>Location</b>	Horn of Africa.
 <b>Sea Coast</b>	1,200 km coastline along the Red Sea
 <b>Population</b>	Approximately 3.5 million
 <b>Capital</b>	Asmara
 <b>Main Ports</b>	Massawa and Assab
 <b>Currency</b>	Eritrean Nakfa (ERN): 15 Nakfa = US\$1
<b>Climate</b>	Varies with altitude : Temperate central highlands plateau; Hot and humid Eastern lowlands; and Hot and arid Western lowlands.
<b>Time zone</b>	GMT + 3

# The People



# History of Mining in Eritrea

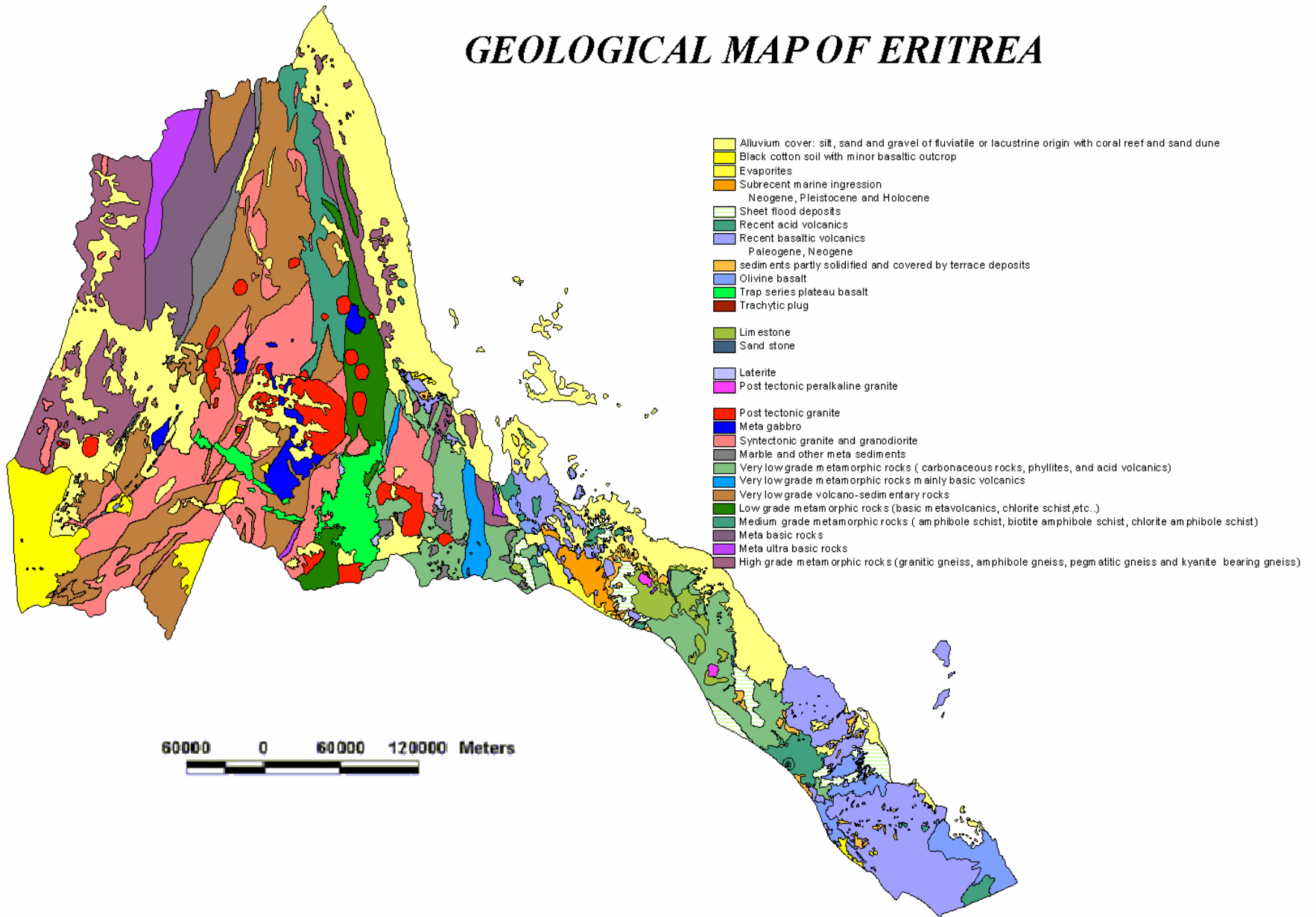
- Artisanal gold mining has been practiced since the times of the Egyptian Pharaohs.
- Modern gold mining started during the Italian colonial rule -1891-1941. With more than 20 small gold mines prior to WW-II.
- Post WW-II Eritrean political and security conditions hindered the development of the mining sector.
- The Liberation of Eritrea in 1991, followed by the National Referendum that resulted in Independence in 1993, created a new opportunity for the proper assessment of the national mineral resources and the development of strategies for their extraction.



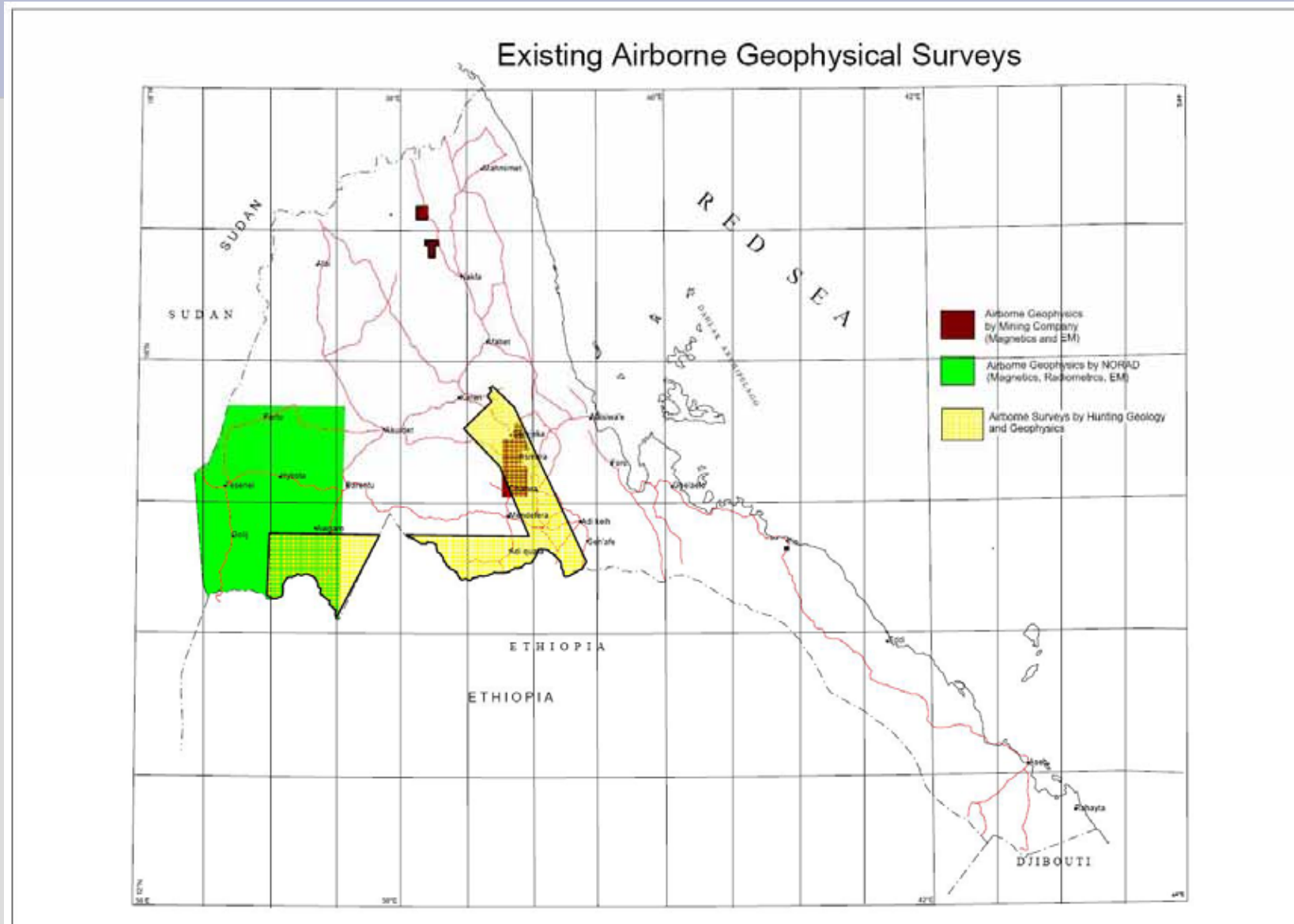
# The Geology of Eritrea

- Precambrian basement rocks
  - Greenstone proterozoic rocks underlie >60% of the land area
- Mesozoic sediments
  - Outcrop in southern parts of the country and in the Danakil
- Tertiary volcanics and sediments:
  - Tertiary plateau basalts
  - Lower Afar stratified flows
  - Afar basalts
- Quaternary Sediments
  - . Far from satisfactory exploration
  - . Favourable for hosting metallic and non metallic minerals
  - . Portrayed by the discovery of VMS deposits (Bisha, Debarwa, Emba Derho Adi Nefas), Gold discoveries at Zara and Adi Nefas Gupo and other advanced projects

# GEOLOGICAL MAP OF ERITREA



# Airborne Geophysics covered



# Known Mineral Occurrences

The geological setting is prospective for:

- Shear hosted gold deposits
- Volcanogenic Massive Sulphides (VMS)
- Base metals in quartz vein settings
- Evaporites
- A variety of construction materials and industrial minerals



- Currently mining activity is at a very early stage and its contribution to the national economy is negligible.



# Key Policy Issues

- All mineral resources in Eritrea are state property.
- The Government aims to a sustainable development of the minerals sector.
- Adherence to internationally accepted mining industry practices and application of modern technology and methods of mitigating negative environmental and social impacts are cardinal requirements.
- The crucial role of foreign investment in mineral exploration and extraction and transfer of technology and knowhow is recognised and encouraged.
- National Mining Company will hold Government interests in mining operations.

# Incentives for Investment

- The right to exploit commercial deposits discovered under a valid exploration licence is guaranteed by the Mining Law.
- The licensee has the right to sell locally or export free of duties and taxes, all minerals it produced.
- A simple and fair taxation system is applied.
  - Income tax from mining operations - 38%
  - Nominal import duty (0.5%) on all inputs necessary for mining operations
  - Royalty rates 3.5 for base metals and 5% for precious metals, with the option of waivers in special conditions
  - No tax on dividends

## ...Incentives for Investment

- The right to carry forward operational losses and deduct them from gross incomes is guaranteed.
- Equitable foreign exchange regulations permit:

# The Licensing System

- Prospecting License – valid for one year and non-renewable  
Size of one license = 100 Km<sup>2</sup>
- Exploration License – valid for an initial period of three years, may be renewed twice for additional terms of one year each  
Size of one license = 50 Km<sup>2</sup>
- Mining License – valid for a period of 20 years with optional 10 year renewals  
Size of one license = 10 Km<sup>2</sup>

## License Fee

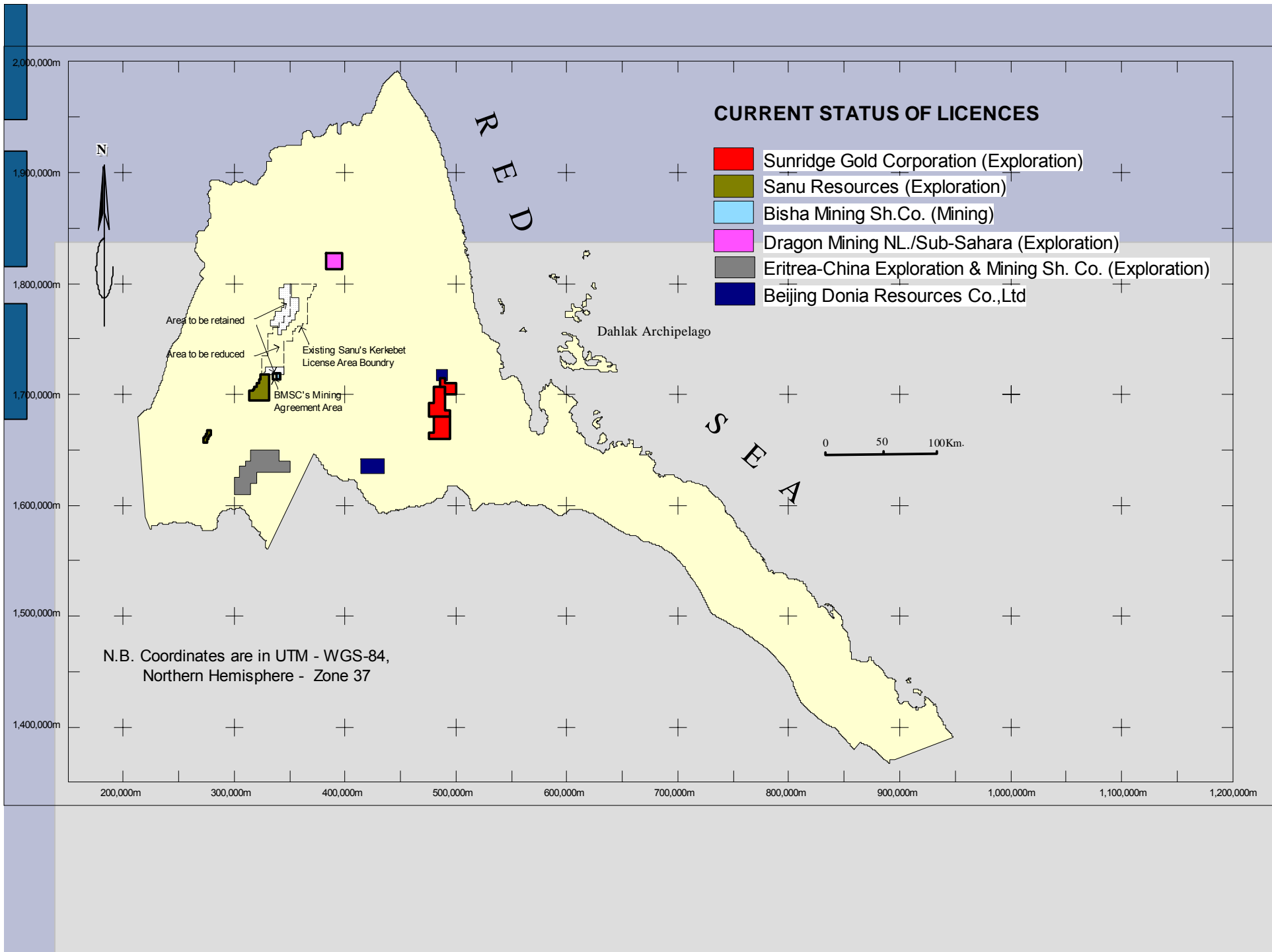
<b>License Type</b>	<b>License fee in US\$ (per license)</b>	<b>Annual Rentals in US\$ (per KM<sup>2</sup>)</b>
<b>Prospecting</b>	<b>80</b>	<b>8</b>
<b>Exploration</b>	<b>240</b>	<b>32</b>
<b>Mining</b>	<b>960</b>	<b>96</b>

# Mineral Exploration and Mining in Eritrea

- Currently active mining and exploration companies:
  - Bisha Mining Share Company (ENAMCO & Nevsun Resources Inc)
    - Bisha,
  - Sunridge Gold Corporation
    - Debarwa, Adi Nefas, Embaderho
  - Sanu Resources Inc
    - Kerkebet, Mograib
  - Sub Sahara Resources/Dragon
    - Zara
  - Beijing Donia Resources
    - Woki-Defere, Kenatib
  - Eritrea-China Exploration and Mining sh. Co.
    - Augaro

## .....Mineral Mining and Exploration in Eritrea

- Bisha
  - Mining Licence has been granted.
  - Construction for Mining has started already.
- Debarwa, Adi Nefas and EmbaDerho are likely to be developed soon
- EmbaDerho
  - Scooping study finished
- Augaro, Woki and others
  - Exploration works including drilling is underway

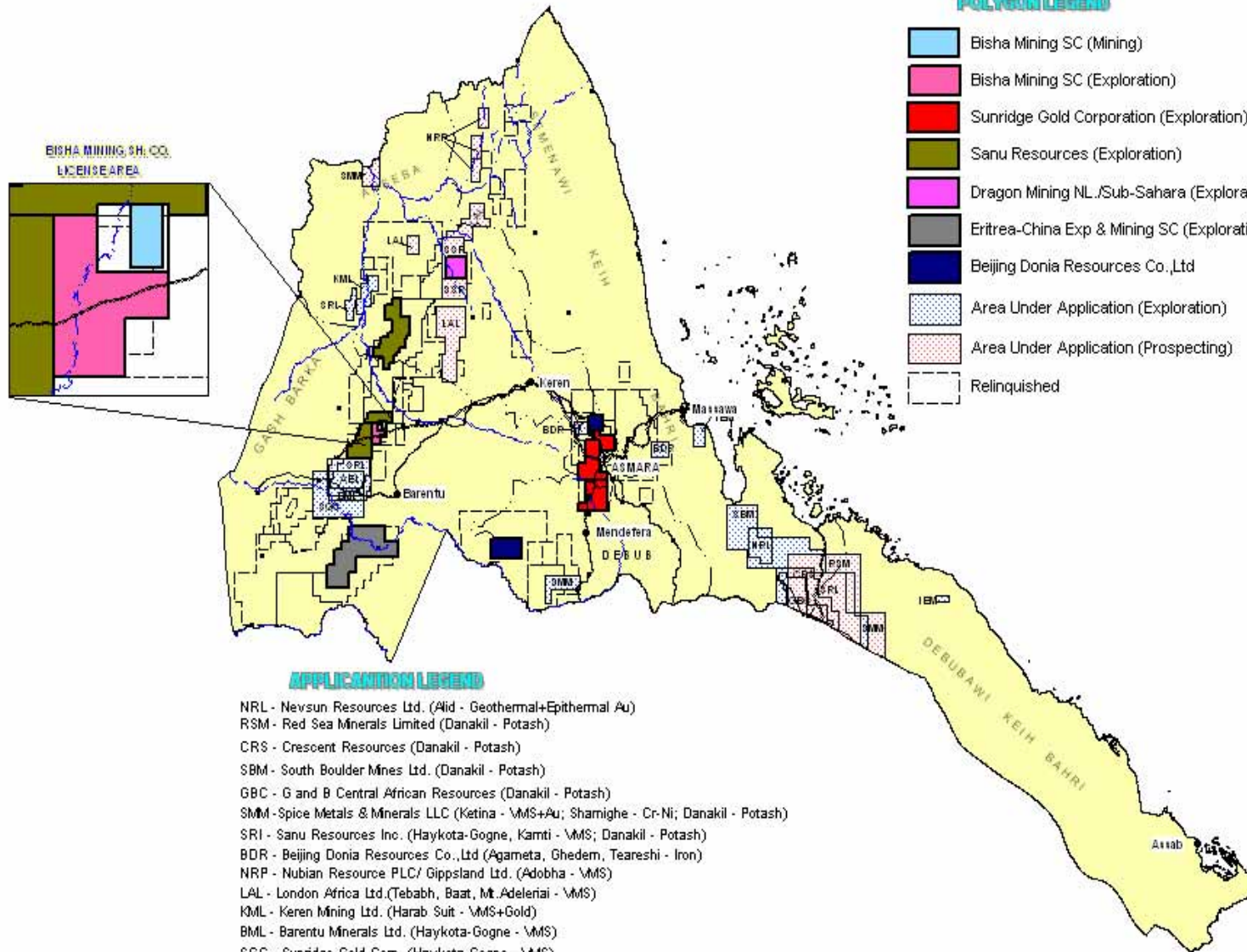




# CONCESSION AND APPLICATION MAP OF ERITREA

## POLYGON LEGEND

-  Bisha Mining SC (Mining)
-  Bisha Mining SC (Exploration)
-  Sunridge Gold Corporation (Exploration)
-  Sanu Resources (Exploration)
-  Dragon Mining NL /Sub-Sahara (Exploration)
-  Eritrea-China Exp & Mining SC (Exploration)
-  Beijing Donia Resources Co.,Ltd
-  Area Under Application (Exploration)
-  Area Under Application (Prospecting)
-  Relinquished



## APPLICATION LEGEND

- NRL - Nevsun Resources Ltd. (Aiid - Geothermal+Epithermal Au)
- RSM - Red Sea Minerals Limited (Danakil - Potash)
- CRS - Crescent Resources (Danakil - Potash)
- SBM - South Boulder Mines Ltd. (Danakil - Potash)
- GBC - G and B Central African Resources (Danakil - Potash)
- SMI - Spice Metals & Minerals LLC (Ketina - VMS+Au; Shamighe - Cr-Ni; Danakil - Potash)
- SRI - Sanu Resources Inc. (Haykota-Gogne, Kamti - VMS; Danakil - Potash)
- BDR - Beijing Donia Resources Co.,Ltd (Agameta, Ghedem, Teareshi - Iron)
- NRP - Nubian Resource PLC/ Gippsland Ltd. (Adobha - VMS)
- LAL - London Africa Ltd.(Tebabh, Baat, Mt. Adelerial - VMS)
- KML - Keren Mining Ltd. (Harab Suit - VMS+Gold)
- BML - Barentu Minerals Ltd. (Haykota-Gogne - VMS)
- SGC - Sunridge Gold Corp. (Haykota-Gogne - VMS)
- AEL - Andiamo Exploration Ltd. (Haykota-Gogne - VMS)
- SSR - Sub Sahara Resources (Zara - Gold)
- IBM - India Iocile Exp & Mining Ltd (Ghedem - Iron <mining?>; Adaylo - Limestone <cement?>)

## *Major Activities of the Companies*

### **Bisha Mining Share Company**

- Has started civil works on construction and the detailed design work completed the project is well advanced.
- Construction on of housing and infrastructure for around 450 people has already started. Heavy earthmoving for the main process plant will begin shortly. Much of the machinery and equipment for the Project has already been procured, including the main grinding mills. Mining will commence mid-2009 and the Process plant will be delivering gold in the first quarter of 2010 after a capital expenditure of around US\$250 million.



Bisha Mining sh. Co.  
Bisha Project

### **Production on will be:**

- **Gold (Years 1&2) 400+ thousand ounces per year**
- **Copper (Years 3 to 5) 78,000 tonnes**
- **Copper (Years 6 to 11) 120,000 tonnes**
- **Copper (Years 6 to 11) 20,000 tonnes**

## Sub-Sahara Resources

- Focused on the Zara Gold Project
- Drilling (17,000 m of diamond)
  - Metallurgical drilling
  - Structural Drilling
  - Water search drilling
- Petrographic Studies
- Environmental Baseline Study
- Ground based IP/Resistivity Survey
- Regional Geochemical Sampling

- High Resolution Digital Terrain Model
- Resource Estimates by independent consultant company Coffey Mining, at Koka - +1moz gold deposit grading 6.31g/t
- Preparation underway towards pre-feasibility study



Road Construction  
and Drilling  
at Zara



# SunridgeGold

Asmara project – Debarwa, Adi Nefas and EmbaDerho

- Ground Geophysics – Gravity and EM
- Geochemical Sampling
- Detail Geological Mapping
- Diamond Drilling
- Environmental Baseline study on the whole property
- Scoping Study on EmbaDerho Deposit
- Organizing Public Consultation and Workshops to stakeholders

### Resource estimates:

- Debarwa: ~2MT (cutoff 1.0% Cu)
- Adi Nefas: ~2.7 MT (cutoff 2.0% Zn)



### Total contained Metal in Indicated Mineral Resource at Emba Derho

<b>ZONE</b>	<b>Cut-off grade</b>	<b>Millions Tonnes</b>	<b>Millions Pound Cu</b>	<b>Millions Pounds Zn</b>	<b>Thousand Ounces Au</b>	<b>Millions Ounces Ag</b>
<b>Gold Oxide</b>	0.2g/t Au	3.506	5	3	94.4	0.58
<b>Copper Rich Primary</b>	0.5%Cu	38.425	862	835	228	11.5
<b>Zinc Rich Primary</b>	1.0%Cu	20.545	127	1,064	258	8
		62.476	993	1,902	580	20.1

# Sanu Resources

- Focused on Kerkebet and Hambok which are close to Bisha deposit.
- Geophysical Surveys and diamond drilling (518m) on koken area drilling returned encouraging results.
- Detail Geological mapping, Geophysical Surveys and Drilling (1070m) at Aderat – Mogoraib
- Encouraging results from assays on trench samples and in Mogoraib massive sulphide deposits have been intersected.



## Drilling at Hambock (Sanu)



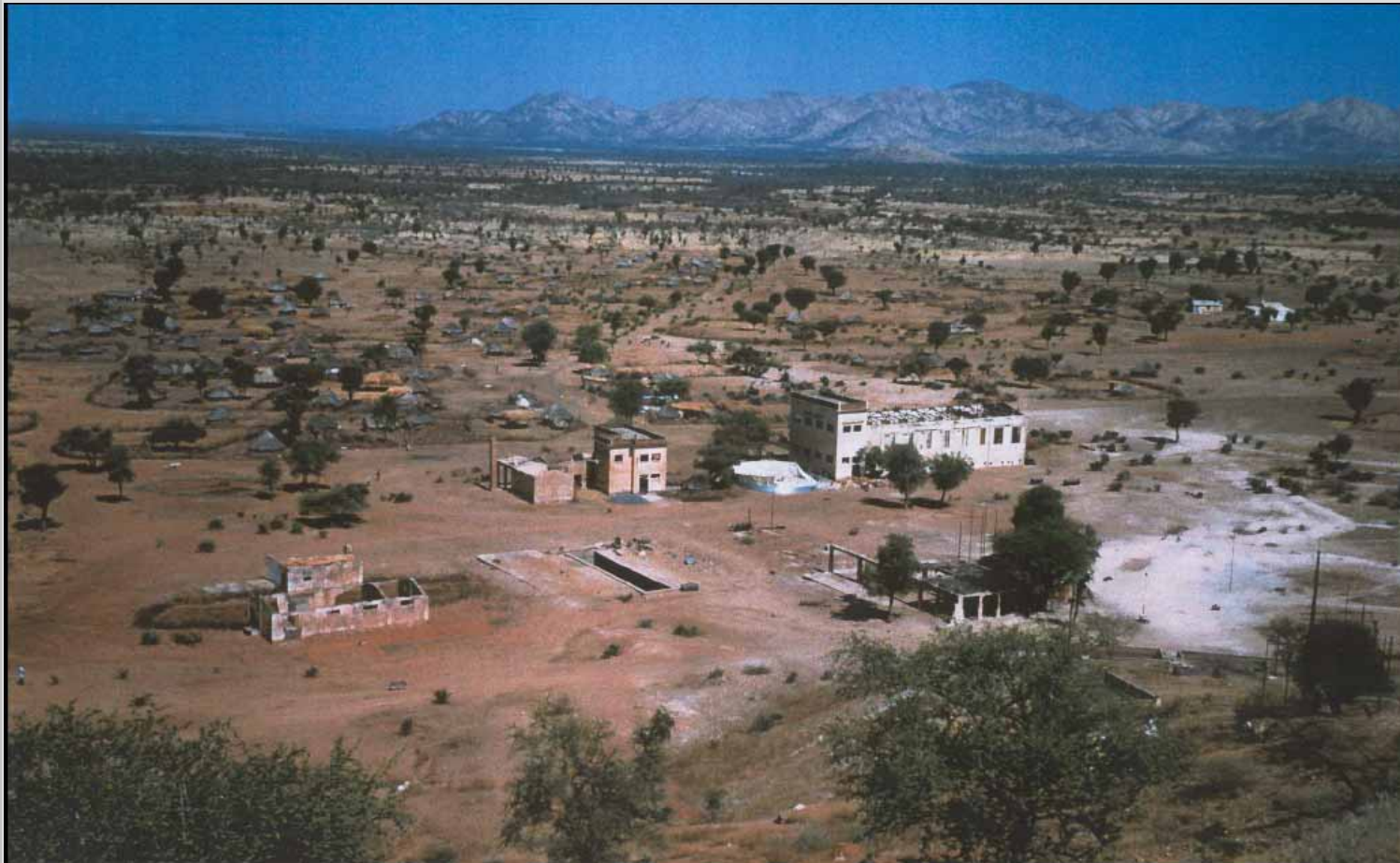
## **Eritrea-China Sh. Co.**

- Exploration works that include tunnel sampling are underway in Augaro
- Drilling is Ongoing

## **Beijing Donia Co.** (Woki, Defere and Adi Kenatib)

- Exploration for iron and copper
- Geological mapping
- Geochemical sampling
- Rock chip sampling

## Augaro Historical Gold Mine (ECEM)



# Geothermal Energy

- There is promising potential for the exploitation of geothermal energy (Alid, Nubro, Dubi, etc.)
- Different exploration works have been conducted so far:
  - Regional Geology and Hydrogeology of Nubro-Dubi)
  - Detail Geology (lineation and structural maps) and hydrogeology of Alid Area
  - Preliminary geophysical survey (Resistivity) in Alid Area
  - Chemical analysis of water samples from Dubi, Nubro and Alid areas
- Looking forward for next stage - drilling



DARERE FUMAROLE



ILEGEDI BUBBLING POOL

# Investment Climate and Opportunities in the Mineral Sector

- Highly prospective geology
- Several open areas for licence application
- Liberal Mining Law
- Strong Government commitment to develop the Minerals sector in partnership with foreign investors
- No “unlicenced miner” problems
- Strong anti-corruption Government stance

I welcome you to be our partners in the  
development of our  
rich but yet untapped Mineral resources.

**THANK YOU**