المملكة العربية السعودية
وزارة الصناعة والثروة المعدنية

# Welcome

## Ministry of Industry & Mineral Resources, Saudi Arabia

المملكة العربية السعودية
وزارة الصناعة والثروة المعدنية

# Opening Remarks

## H.E. Vice-Minister for Mining Affairs Khalid Al-Mudaifer

FUTURE MINERALS SUMMIT
11-13 January 2022, Riyadh

11-13 January 2022, Riyadh
King Abdulaziz International Conference Centre (KAICC)

Kingdom of Saudi Arabia
Ministry of Industry & Mineral Resources

www.FutureMineralsSummit.com

## Why Saudi Arabia?

## The Geology

## The Investment Opportunity

## Saudi Vision 2030

Mining is the third pillar of Saudi Arabia's industrial growth

### Strategic focus

Accelerating exploration

Enhancing business case viability

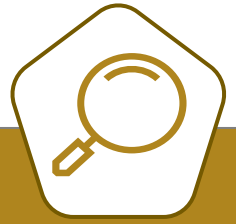
Promoting sector development

Improving value chain social benefits

Boosting sector fiscal revenue contribution

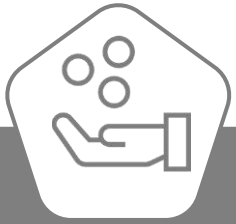
Issued for 2 years with option to extend

## Reconnaissance



Issued for up to 15 years with renewal options

## Exploration



Maximum area 50km$^2$

## Exploitation

# Transparency and Ease of Business

Single point of access

**Ta'adin**

Streamlined via dedicated entity

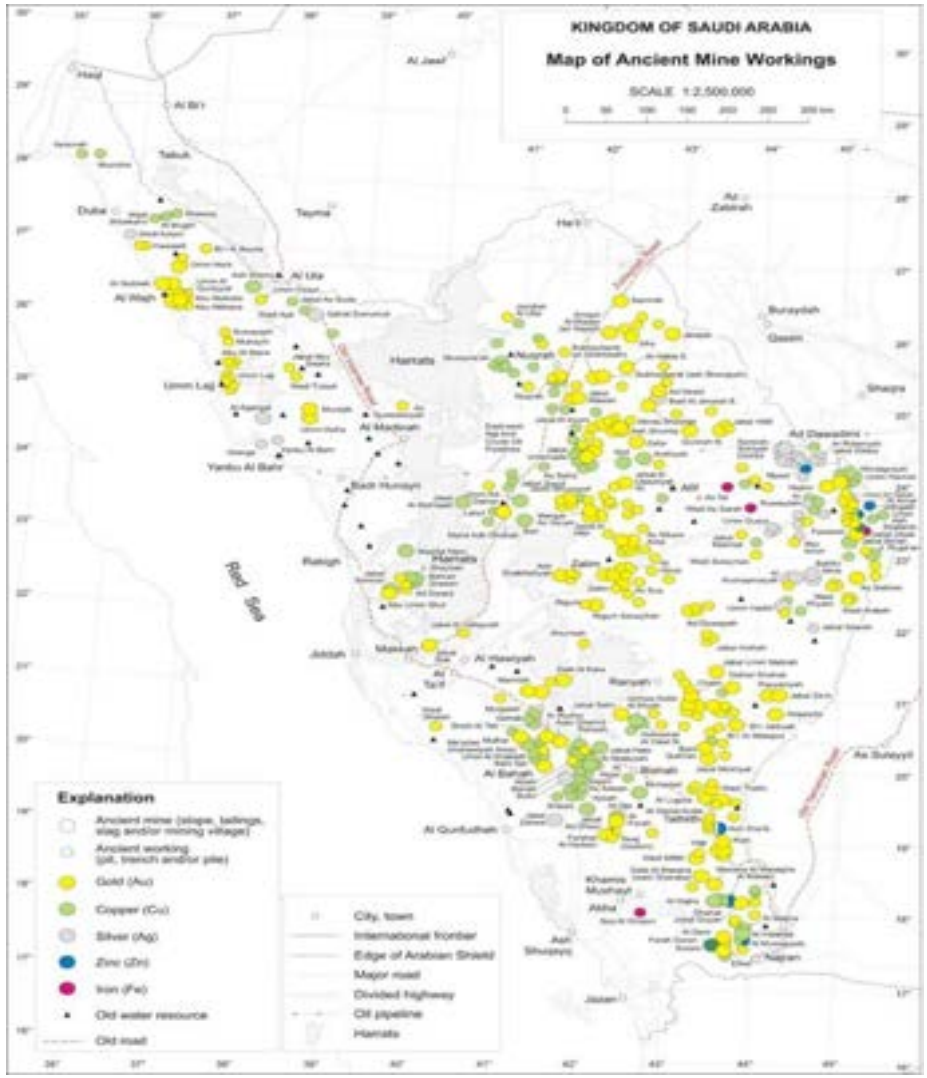
**Governance**

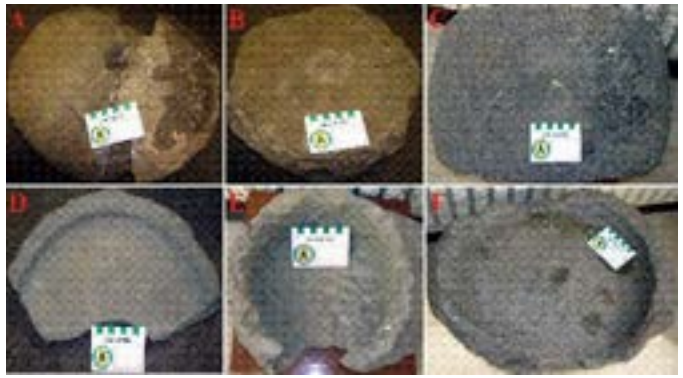
Advanced into World Bank top 10 improved business climate

**Ease of Business**

# The Geology

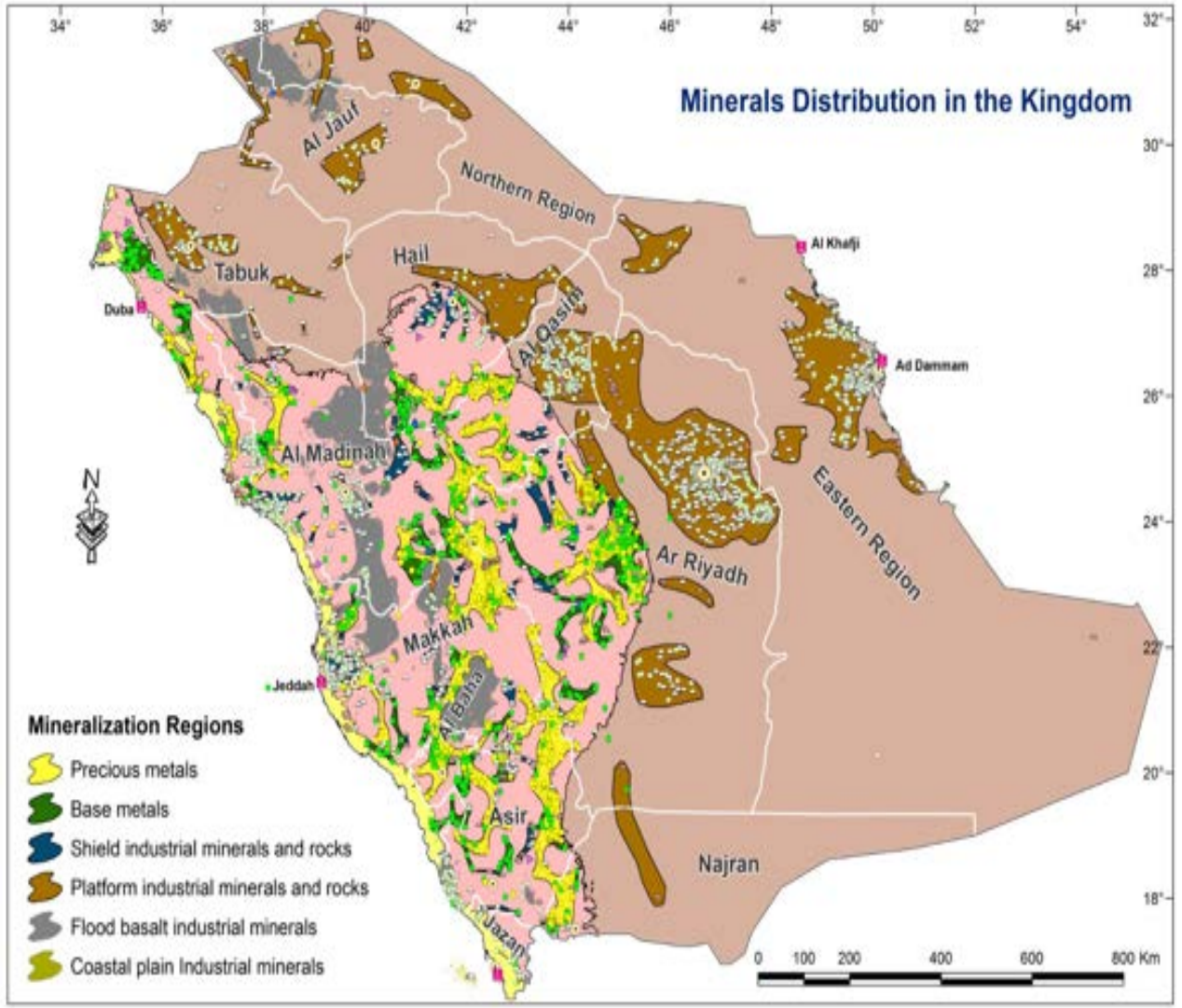
# Mineral exploration in the Arabian Peninsula (Saudi Arabia) dates back over 3000 years



# Saudi Arabia has a variety of metallic and non-metallic resources

- Most metallic-mineral resources are located in Precambrian rocks of the Arabian Shield, in the western half of the Kingdom.
- Base and precious-metal occurrences are associated with mineral districts forming prospective belts, reflecting collision zones and orogenic intrusive.
- The past 50 years of exploration by various organizations and companies have led to the discovery of more than 5500 mineral occurrences (~2500 metallic minerals).





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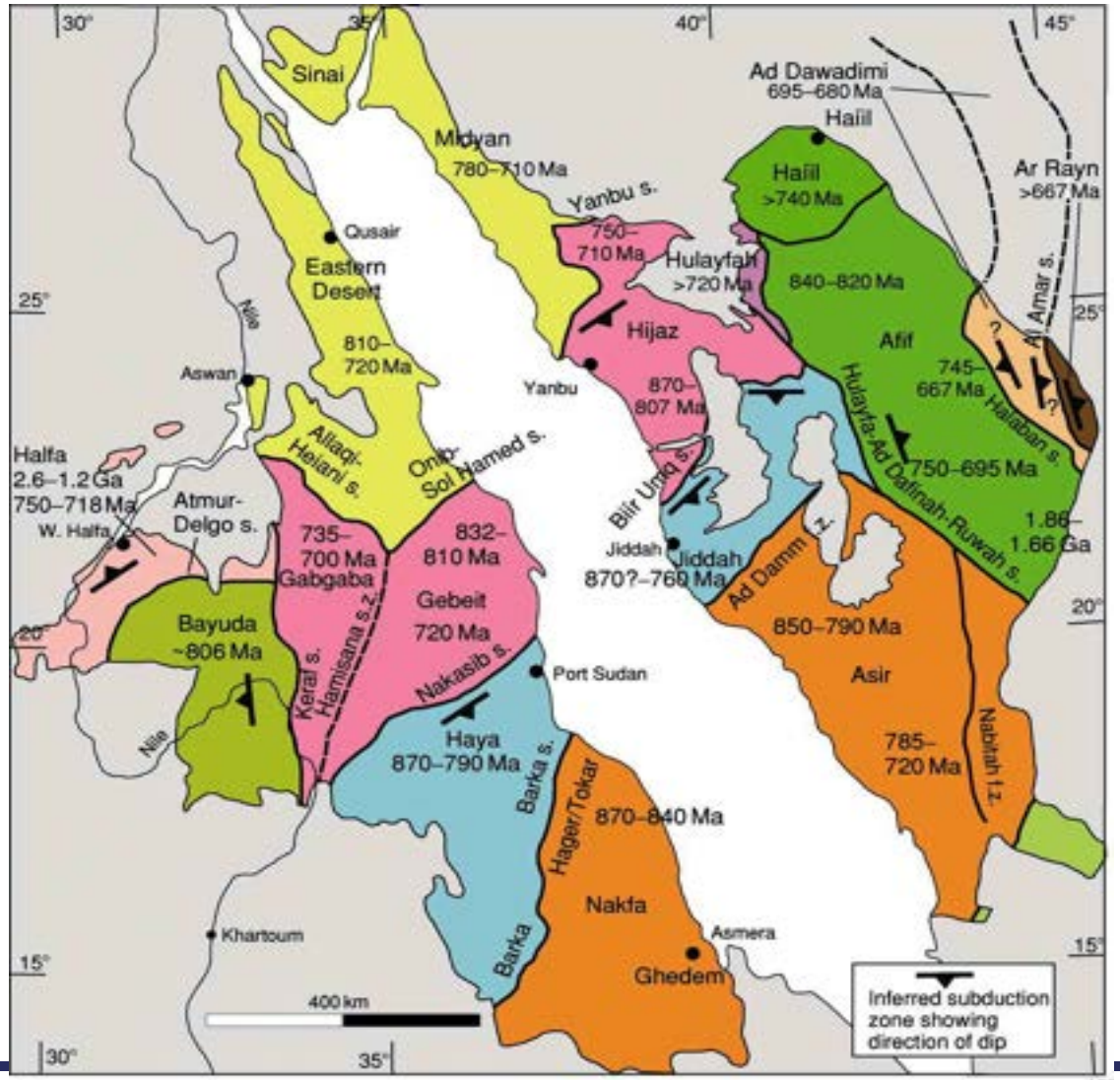
# The Arabian Shield is the host for metallic ore mineralization in Saudi Arabia

- Covers 620,000 km2 in in western KSA and covers ~25% of the area of KSA.
- Extends 2,000 km north-south and <700 km east-west
- Exposes one of the largest and best exposed assemblages of Neoproterozoic (~1000-570 Ma) rocks in the world .
- Bounded by onlapping Phanerozoic sedimentary successions and is separated from the Nubian part of the African Shield by the Red Sea rift.
- Comprised of volcano-sedimentary successions and associated plutonic complexes that have been deformed, metamorphosed and intruded by numerous, predominantly granitic plutons.





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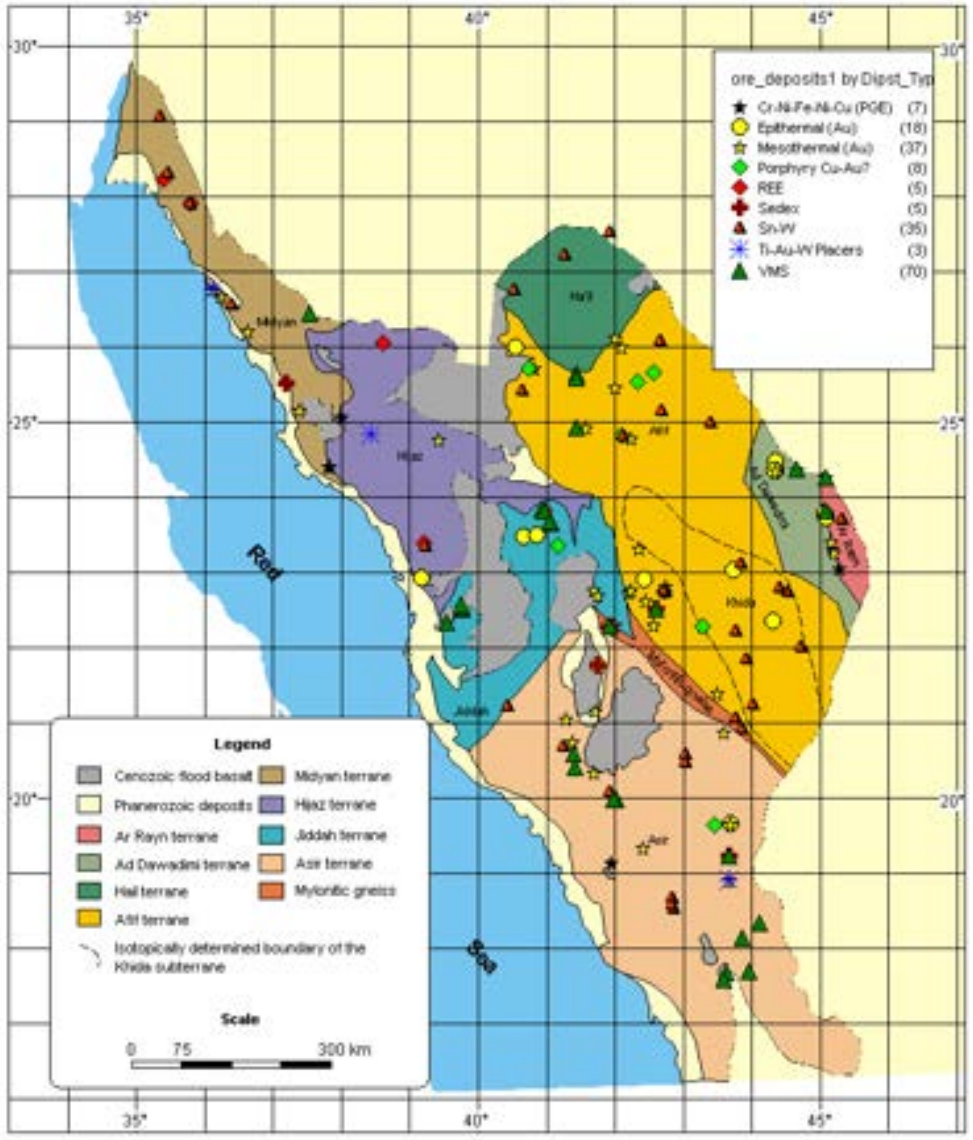
# The Arabian Shield is the host for metallic ore mineralization in Saudi Arabia

- Orogenic gold veins related to faults.
- Epithermal gold and base-metal sulfide mineralization
- Base and precious metals deposits related to submarine volcanism (VMS).
- Sedimentary Pb, Zn mineralization.
- Ta (Sn-W) mineralization related to peraluminous post-collisional granite.
- Porphyry-type Cu-Mo, Cu-Au and W-Mo mineralization.
- Cr-Ti-Fe-Ni-Cu (PGE) mineralization related to mafic-ultramafic rocks.
- REE-Th-U mineralization related to granite and syeno-granite.
- Ti, Au and W residual placers.





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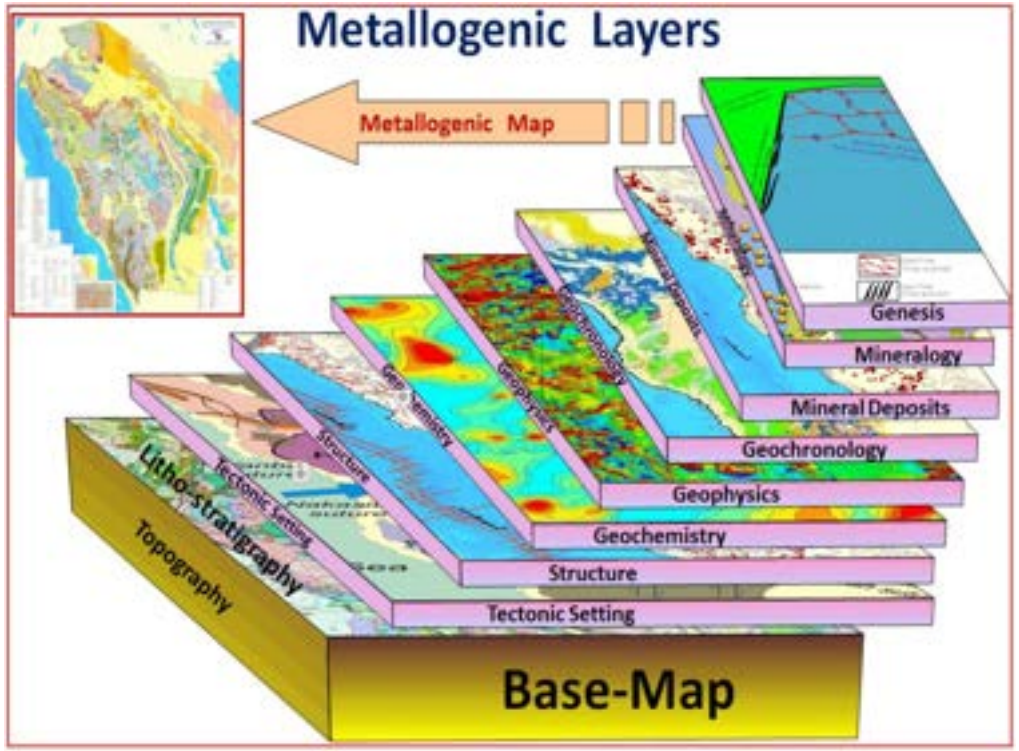
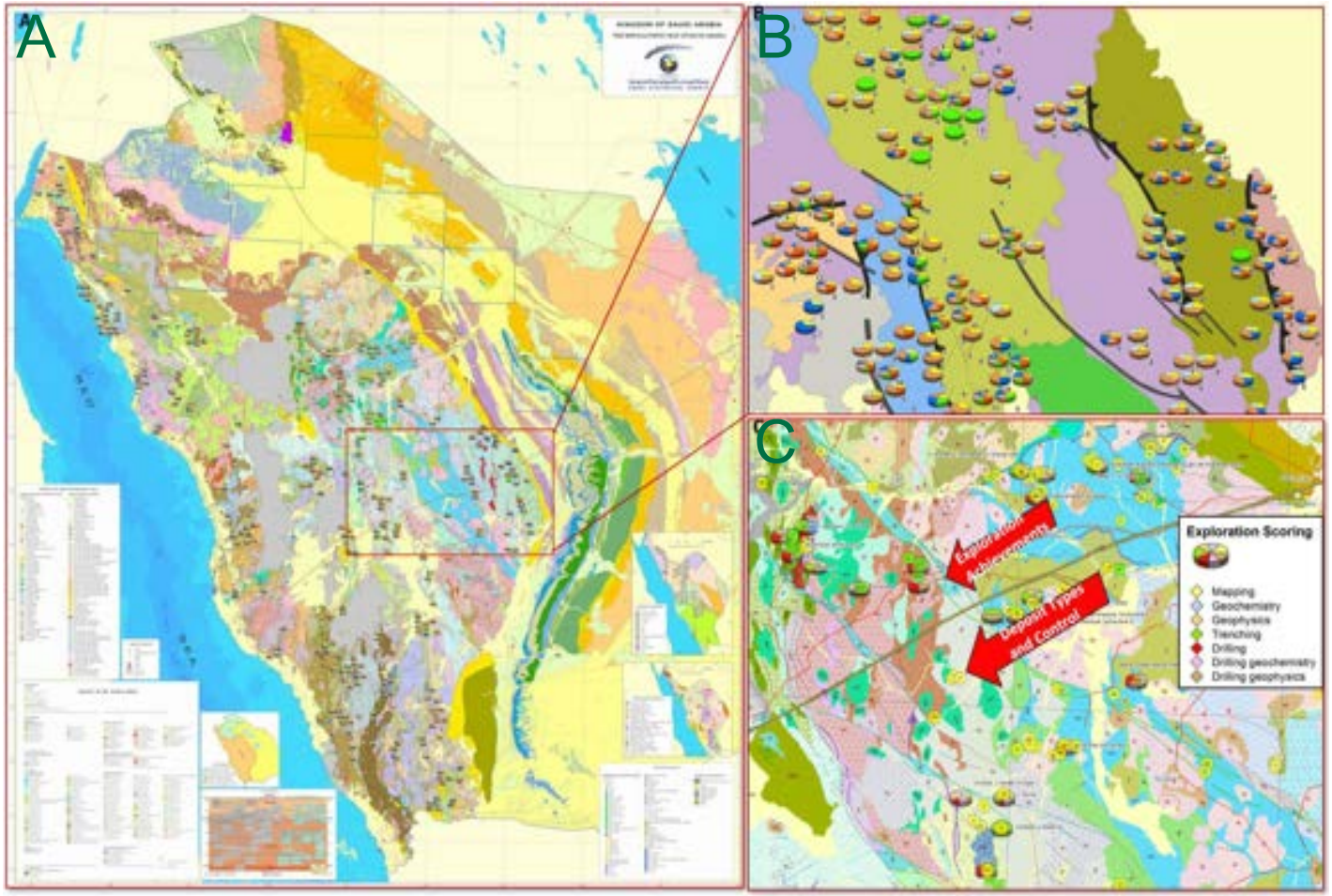
# KSA Metallogenic Map




A) Metallogenic map B) Enlarged portion of the mineral deposits

C): Mineral exploration activities in a portion of the Shield.



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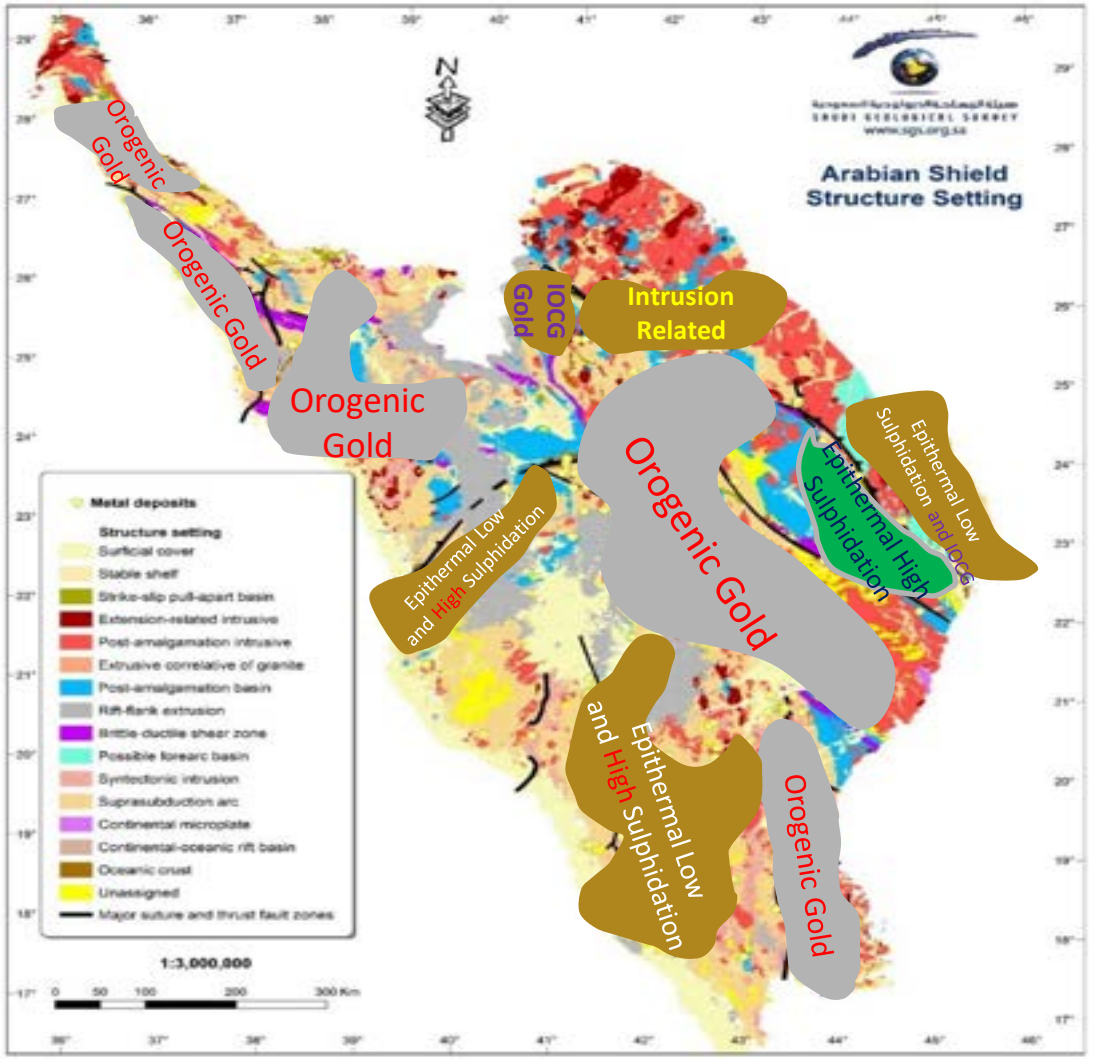
# Mineral Deposits in the Shield

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# Suwaj Porphyry Cu prospect


Study area 8x2 km, 5 clusters identified



16 DDH: 5048 m drilled.



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## Saudi Geological Survey Initiatives

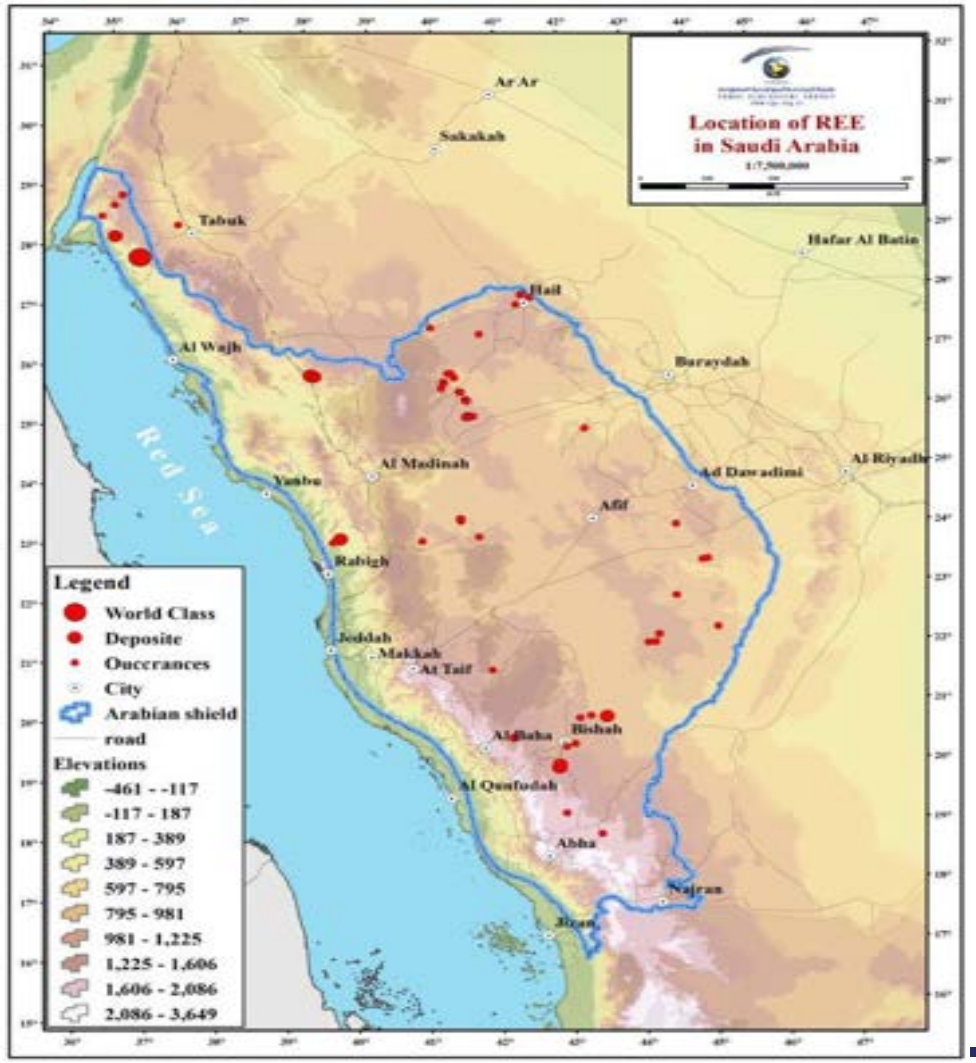
- Regional Geological Survey Program
  - 620,000km2– 2,306,000 line km aeromagnetics and radiometric
  - 100,000 samples of stream sediment
  - 250,000 km2 geological mapping of 1:50,000

- National Geological Database
- National Drilling Core Library
- Launch KSA Accelerated Exploration Program/Unit
- Exploration and Evaluation for Geothermal Energy Resources
- Mining Center of Excellence
- Monitor Geoscience Hazards

# REE

- There are more than 78 REE Locations in the Arabian Shield.

According to the vision of the Kingdom of Saudi Arabia 2030, the Saudi Geological Survey Authority has launched a package of important projects and programs, including regional, accelerated exploration, and regional geological programs. Many REE Locations were discovered through these strategic projects. In order to provide large important reserves of minerals, especially REE and other strategic minerals.





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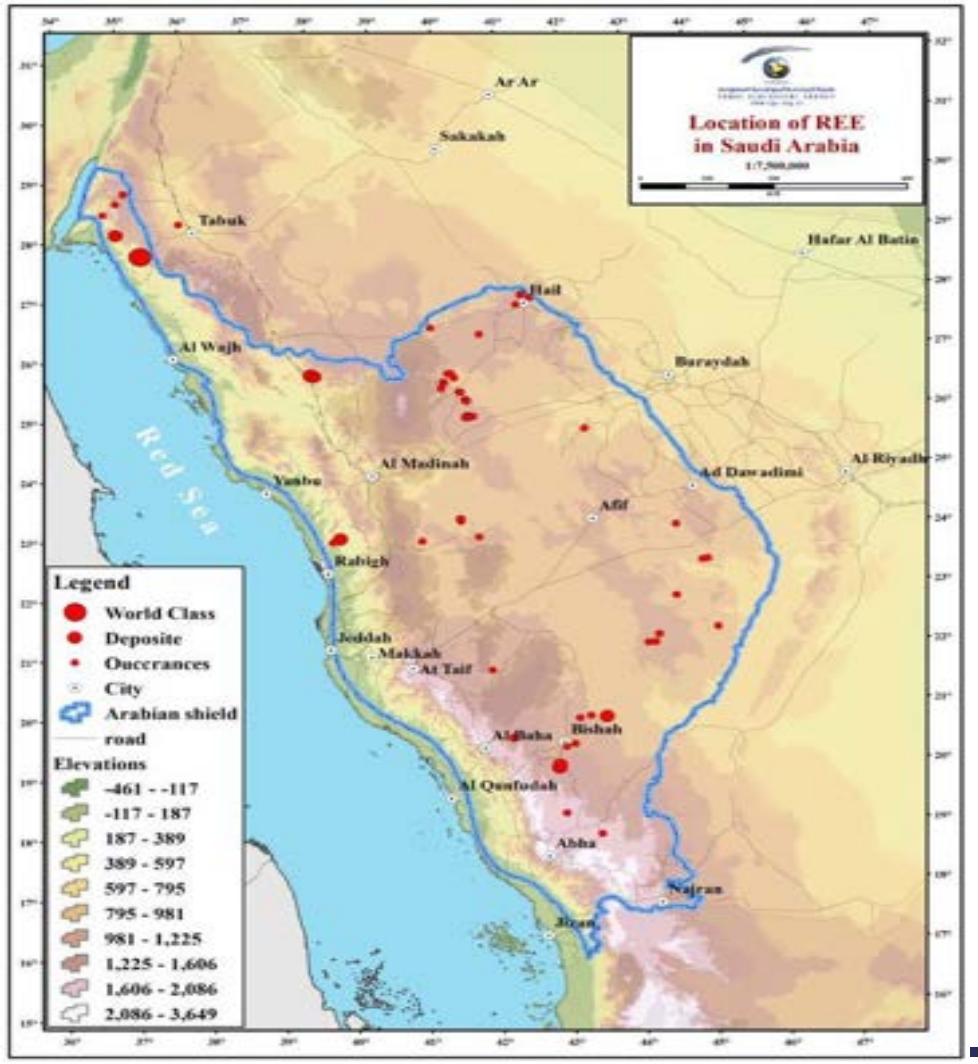
## Project of REEs in Saudi Arabia

The Saudi Geological Survey (SGS) executes this project for the Ministry of Energy, Industry and Mineral Resources in 3 years contract.

The map shows the locations of these 8 prospects.

- Jabal Al Hamara
- Jabal Tawlah
- Umm Al Birak
- Jabal Abu Ad Dud North
- Jabal Abu Ad Dud South
- Umm As Suqian
- Jabal Libid
- Jabal Miryash





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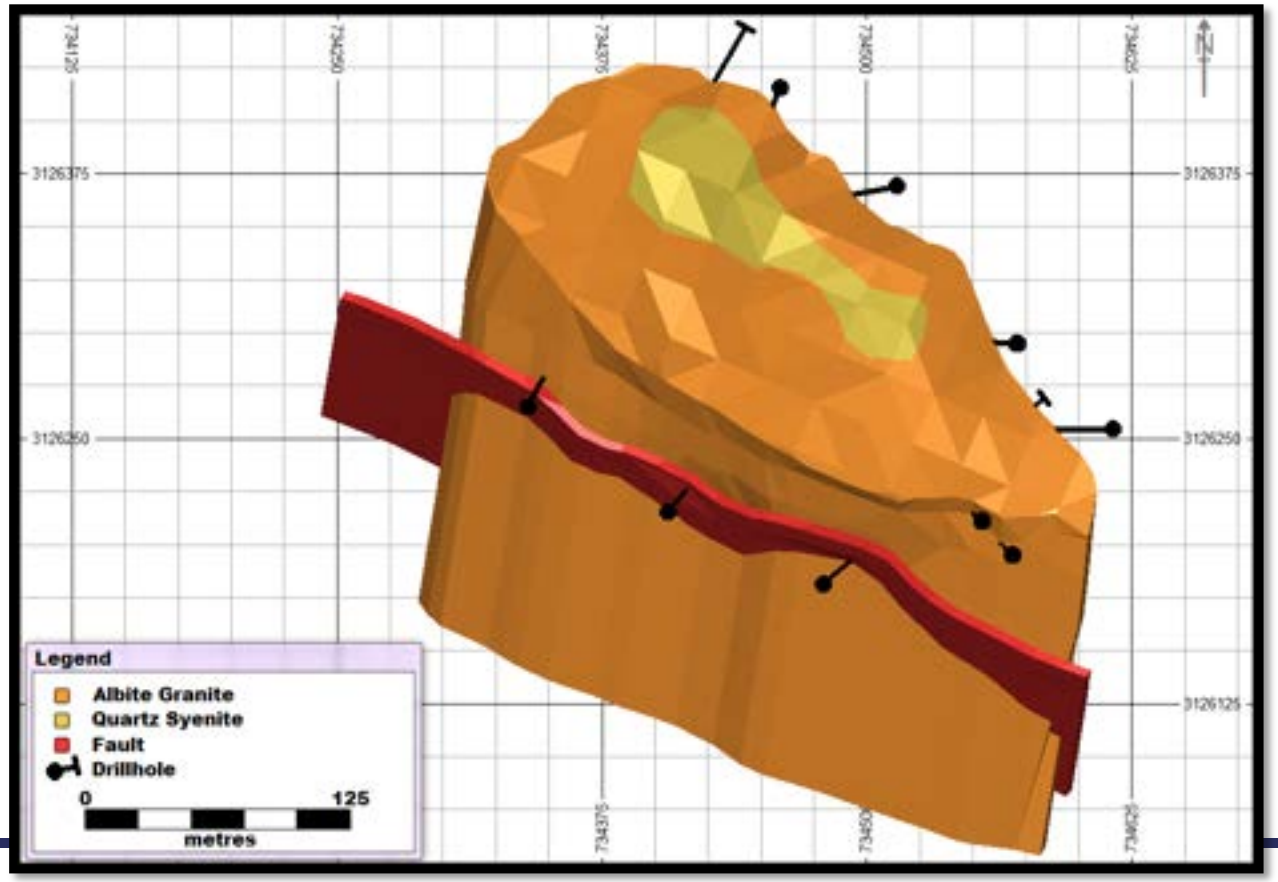
# Jabal Tawlah

| Cut-Off (% TREO+Y) | Million Tonnes | TREO+Y (%) | $Nb_2O_5$ (%) | $Ta_2O_5$ (ppm) | $ZrO_2$ (%) | LREO (%) | HREO+Y (%) | $Y_2O_3$ (%) | Sn (ppm) | $ThO_2$ (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.27% | 8.1 | 0.60 | 0.29 | 156 | 1.19 | 0.02 | 0.58 | 0.39 | 278 | 619 |




Sectional view looking east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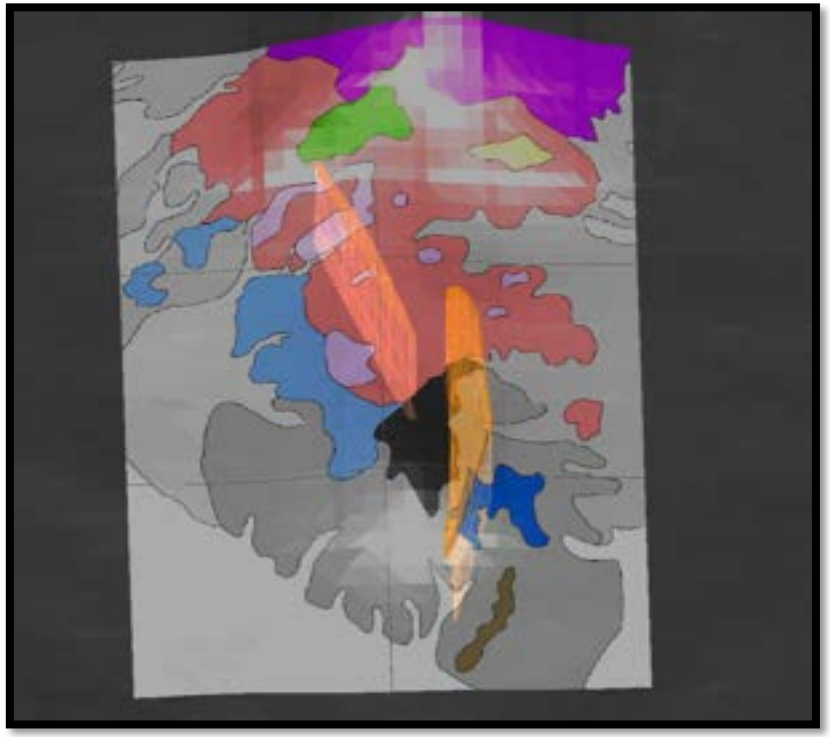
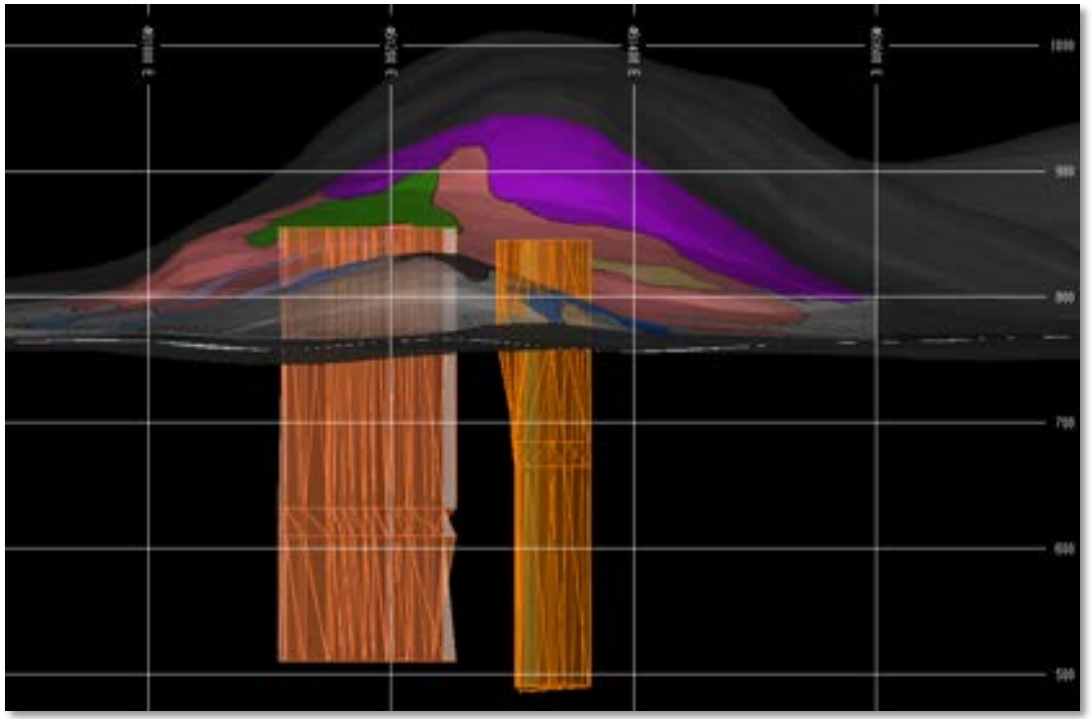
# REE

- Jabal Al Hamrah

| Cut-Off (% TREO+Y) | Million Tonnes | TREO+Y (%) | $Nb_2O_5$ (%) | $Ta_2O_5$ (%) | $ZrO_2$ (%) | LREO (%) | HREO+Y (%) | $Y_2O_3$ (%) |
|---|---|---|---|---|---|---|---|---|
| 0.50% | 16.1 | 0.82 | 0.21 | 0.01 | 1.11 | 0.63 | 0.19 | 0.12 |



Three Dimensional View of Mineralization Wireframes with Geology Map Draped on Surface Topography.



View Looking North Showing Mineralization Wireframes with Geology Map Draped on Surface Topography.

# National Geological Database (NGD)

## Aims of the initiative

- Center of Excellence
- Accelerated Exploration
- Geoscience
- Core Library
- Exploration co-funding program
- Mining Services

**National Geological Database (NGD)**

- **Establishing and developing a national database of geological sciences.**
- **Increasing the value achieved by the mining sector and contribute to national economy.**
- **Provide information from multiple sources to investors.**
- **Granting access to all data and information on the national geological base via the Internet.**

Internal Data Source

**SGS Data:**
- **GIS**
- **Database**
- **Remote Sensing**

Central Database

**National Geological Database**

Web Applications

Mobile Applications

External Data Source

- Governmental Data
- Services Data
- Commercial Data
- Natural Resources Data
- Other …



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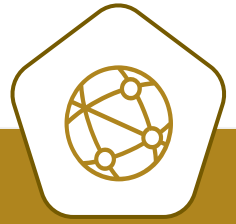
# The untapped opportunity

**$1.3 trillion potential value**



**Detailed mapping of 700,000 square km**

**Online access to 80 years' worth of records**

**Arabian Shield**

**Regional Geological Survey**

**National Geographic Database**

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# The Investment Opportunity

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# Closing Remarks

## Thank you

# Q&A

## Open to the audience