



فرصت های معدنی عمان

Mining Opportunities in Sultanate of Oman





**“It is to the future that we must
turn our eyes and harden our
resolve ”**

His Majesty Sultan Qaboos bin Said bin Taimur

May his soul rest in eternal peace
December 2013



**“ We should all work together
for the sake of our country’s magnificence,
with a persistent resolve to promote it to the
loftiest levels ”**

His Majesty Sultan Haitham bin Tariq bin Taimur

May Almighty Allah preserve and protect
11th Jan 2020





رئوس مطالب

- تاریخچه و استراتژی عمان در حوزه معدن
- مروری بر پتانسیل های معدنی کشور عمان
- مروری بر قوانین و مقررات معدنی در کشور عمان
- فرصت های سرمایه گذاری معدنی در کشور عمان





تاریخچه و استراتژی عمان در حوزه معدن

History and Strategy of Sultanate of Oman In Mining Sector

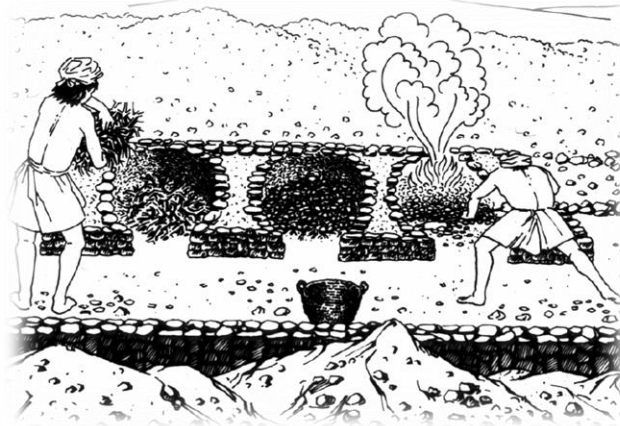


Mining History in Sultanate of Oman

- *Mining and quarrying, age-old practices in Oman*
- *One of the earliest countries which started mining, exported minerals, particularly copper to Mesopotamia for more than 2000 years BC*
- *Known as Majan or the land of copper*
- *The mysterious country of “Makan” or “Magan”, mentioned in Sumerian tablets,*



Ancient Copper Mines



MAGAN

**Early Oman Commodity transporting vessel and civilization.
Sohar was one the richest city in the region during the Bronse Age.**



Mining in Sultanate of Oman

- *Oman is the second largest country after Saudi Arabia in the GCC region with an excellent geology of minerals*
- *Oman's mining industry is an important sector in the country's diversification program.*
- *Oman is the first GCC producer and exporter of ferrochrome.*
- *Oman is home to large deposits of gypsum, limestone, marble and other carbonate-based minerals.*
- *The discovery of deposits of copper, chromite has attracted foreign investments over the last few years*



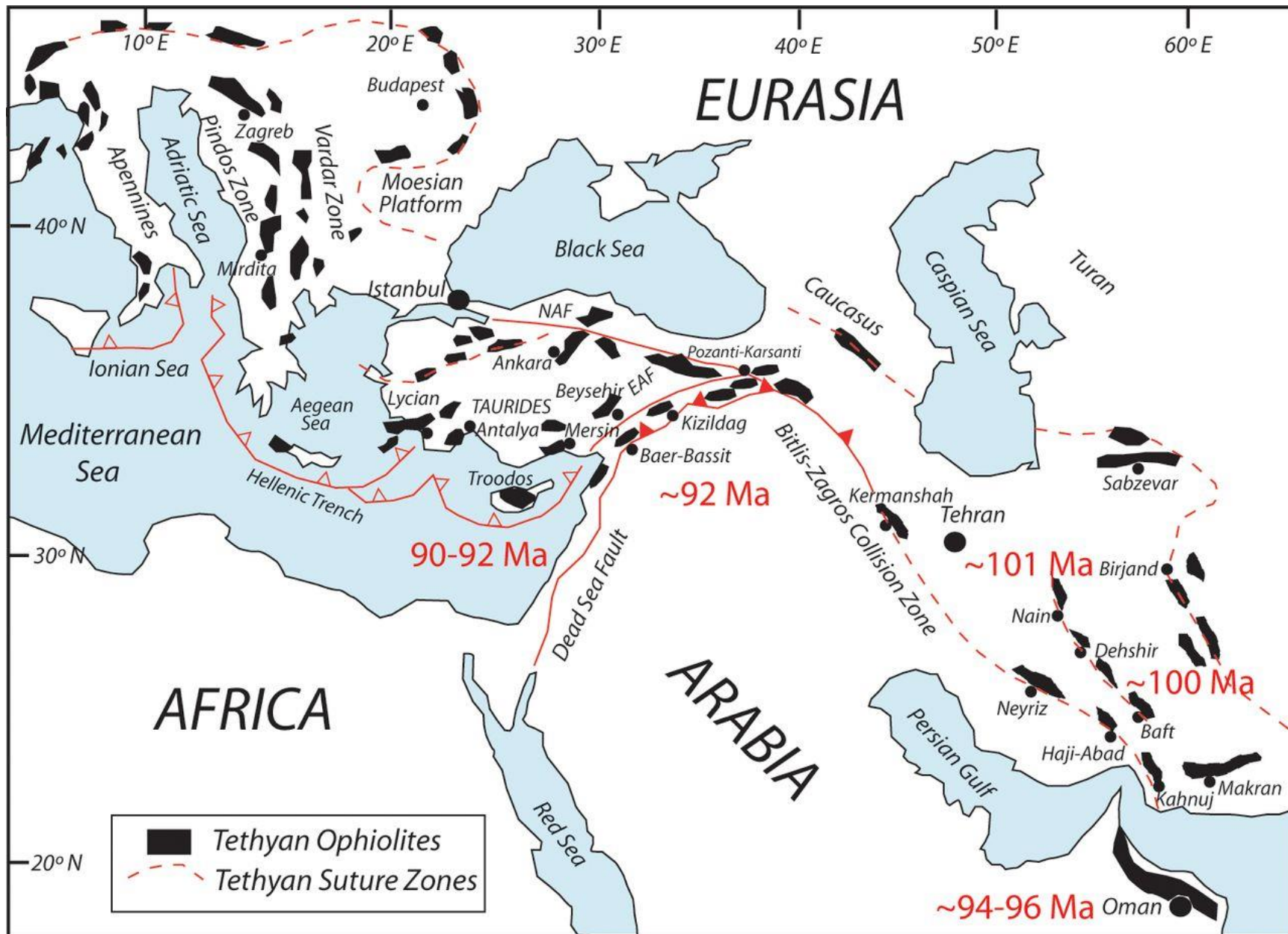
Mining in Sultanate of Oman

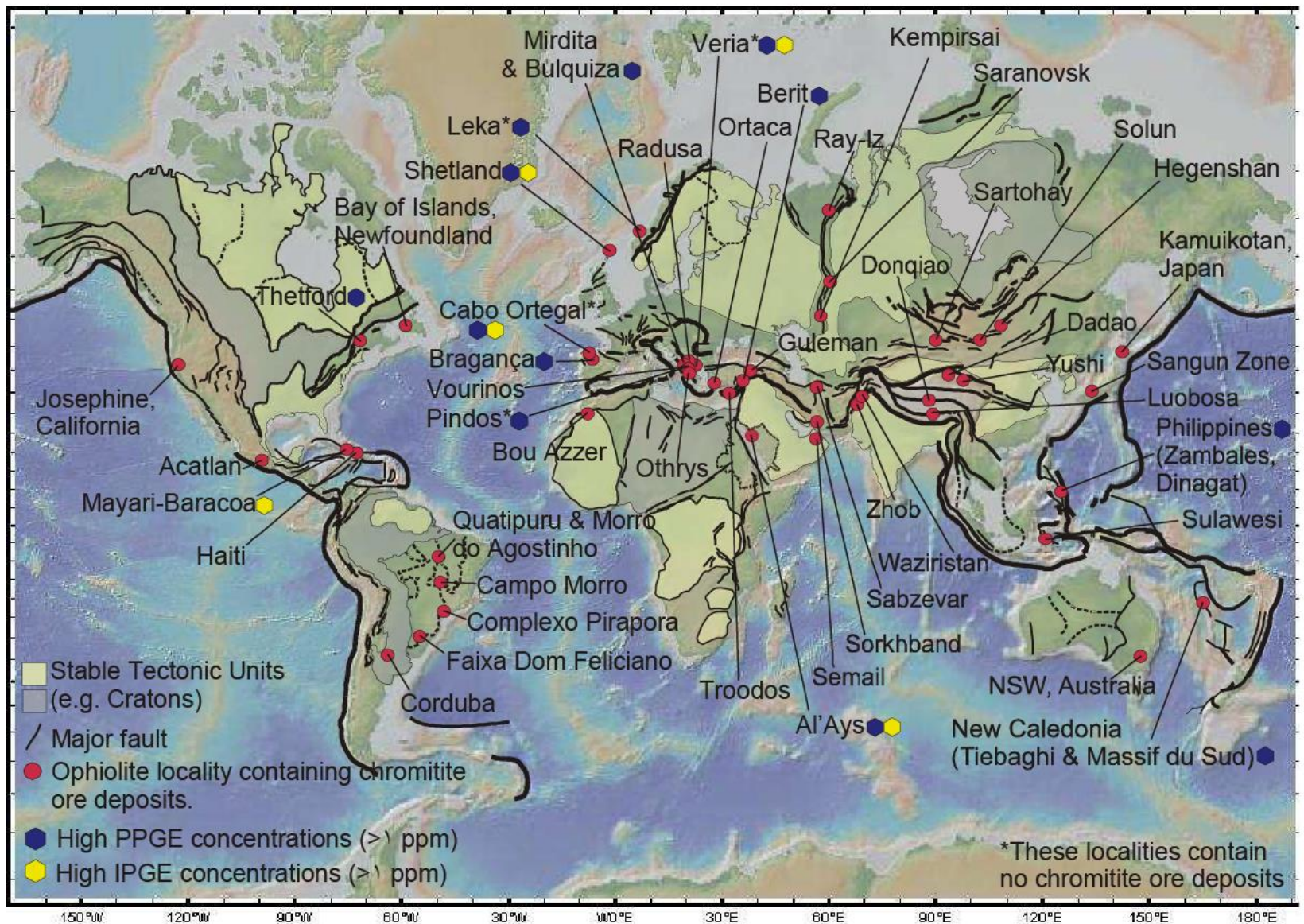
- ❖ *Natural mineral resources, concentrated mainly in its 700-km by 150-km mountain range, which offers an exposed ophiolite geological outcrop containing minerals such as copper, gold, silver, chromite, lead, nickel, manganese and zinc*
- ❖ *other regions in the sultanate are blessed with deposits of dolomite, limestone, gypsum, silica, cobalt, marble and iron.*





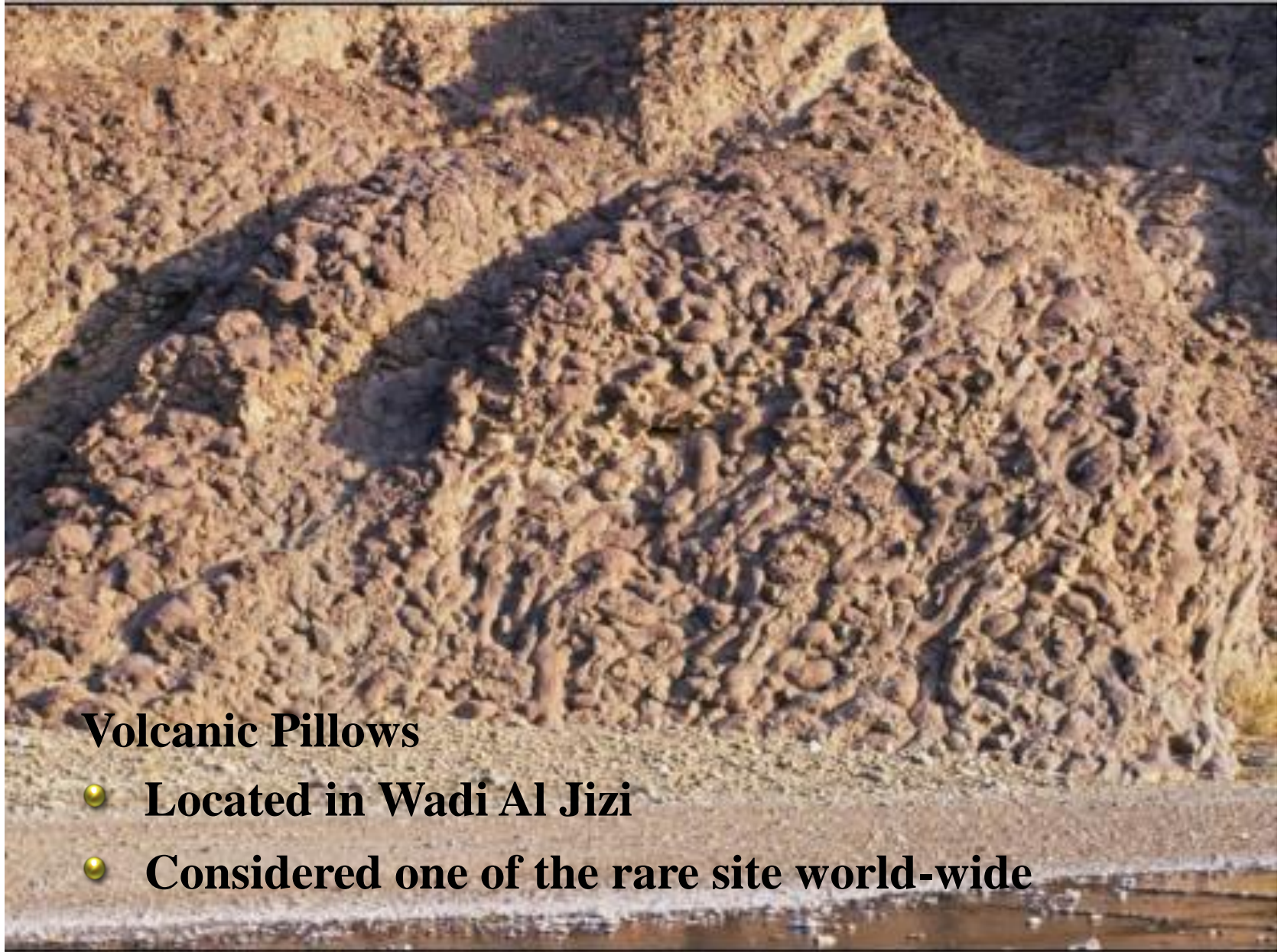
**Distribution of Tethyan ophiolitic rocks in Alpine-Himalayan orogenic belt
(modified from Dilek and Flower, 2003)**





Map of the world showing the major PGE-barren podiform chromitites (Prichard and Brough, 2009).

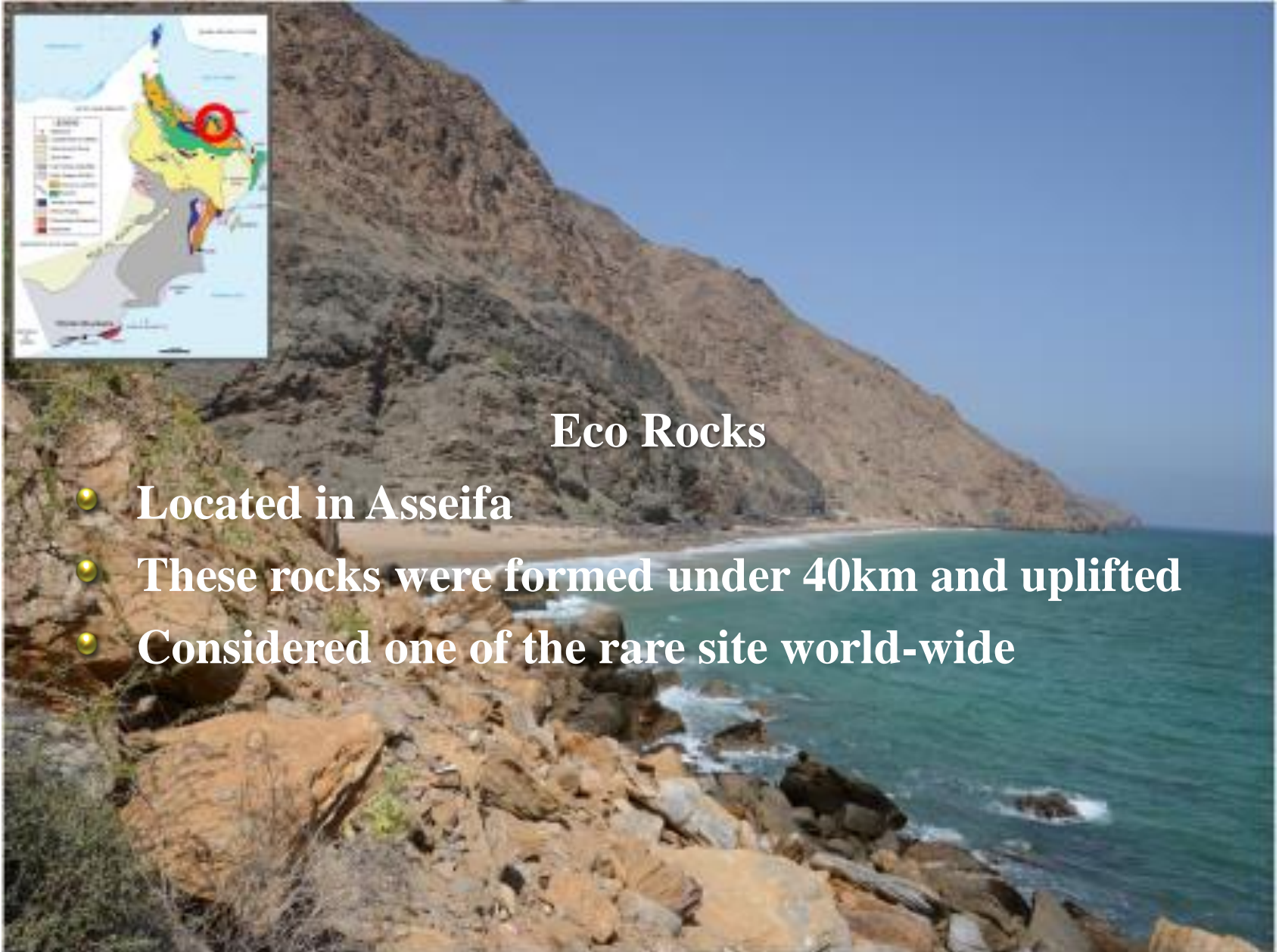
Geological Features



Volcanic Pillows

- **Located in Wadi Al Jizi**
- **Considered one of the rare site world-wide**

Geological Features



Eco Rocks

- Located in Asseifa
- These rocks were formed under 40km and uplifted
- Considered one of the rare site world-wide

Geological Features



Jabal Mishit

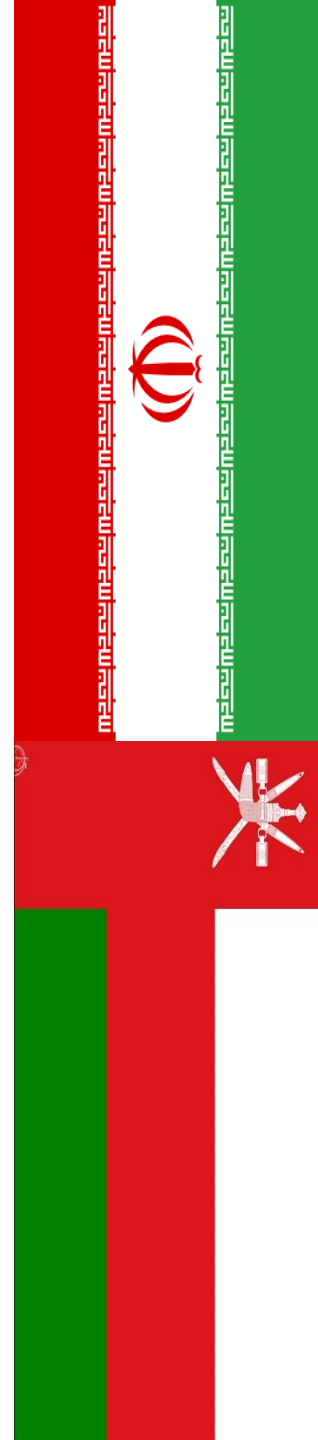
- **Located in Ibri**
- **A 2000m mountain carried over the Ophiolite and uplifted to surface**
- **Considered one of the rare site in the middle east**



رؤية عُمان

2040

OmanVision



ECONOMY AND DEVELOPMENT PILLARS

Creating Wealth through Economic Diversification and Private Sector Partnership



Ensuring Balanced Governorates Development



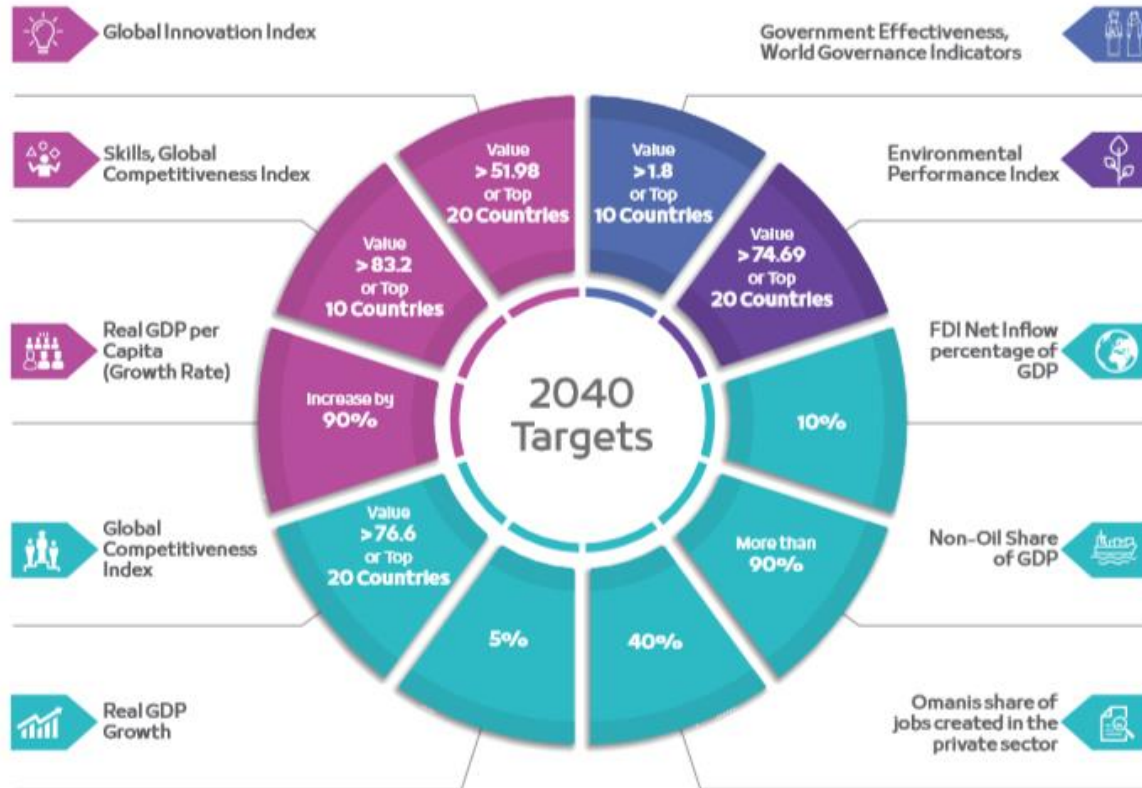
Building World-class Infrastructure and Liveable Cities



Preserving Environment Sustainability



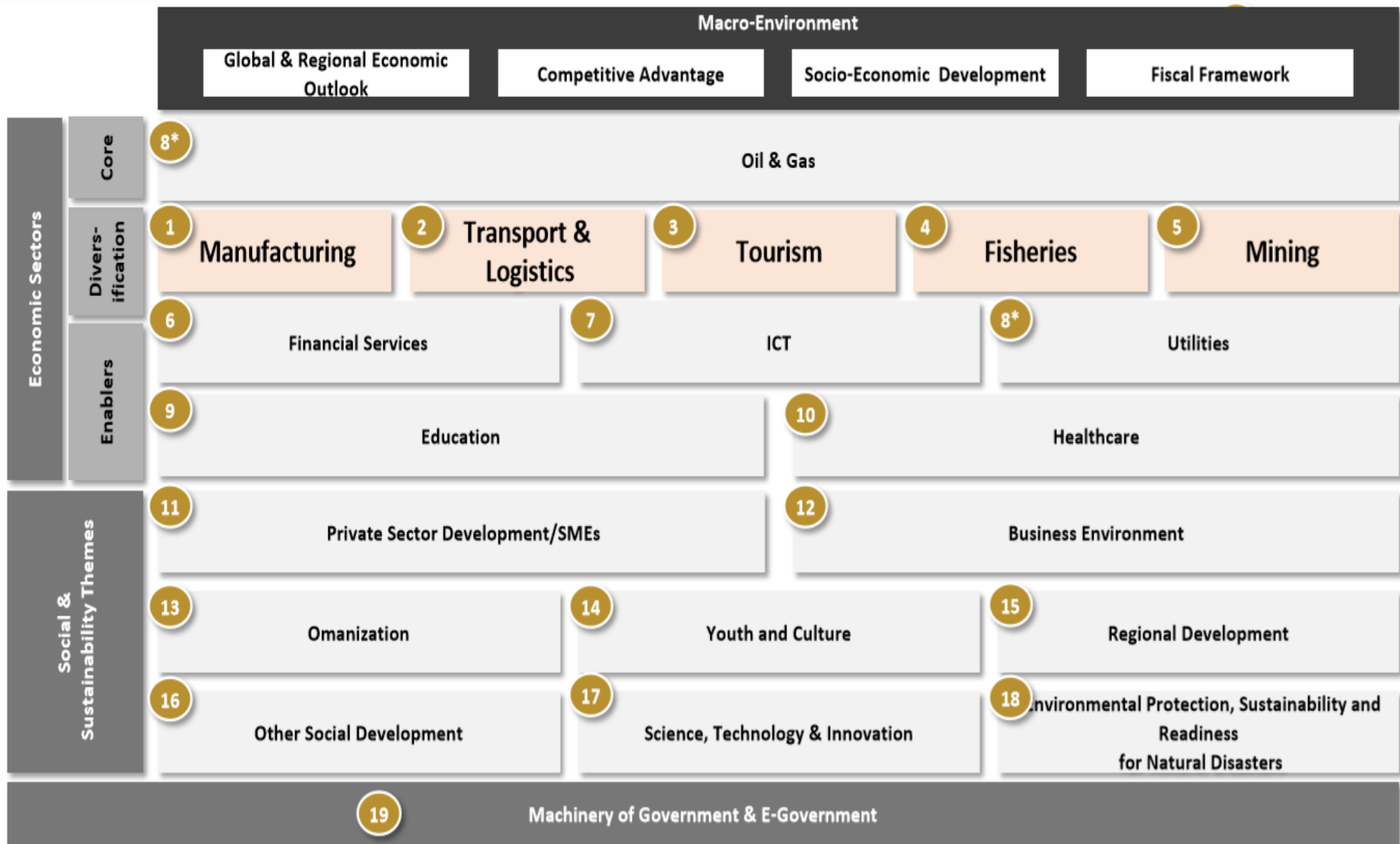
Oman: Joining the World's Developed Countries



Main Oman 2040 Vision Indicators



The 9th Five-Year Development Plan of Sultanate of Oman



The 9th Five-Year Development Plan of Sultanate of Oman

Policy Targets for the Strategic and Economic Diversification Sectors

Criteria for choosing the Diversification Economic Sectors

- | | | | |
|---|--------------------------------------|---|---|
| 1 | Ability to create job opportunities | 3 | Ability for sustainable and continuous growth |
| 2 | High competitiveness internationally | 4 | Ability to develop growth in other sectors |



Mining

- Share of the sector in GDP is 0.4% and is expected to achieve 0.5% by 2020.
- Average growth is forecasted at 6.5% per annum.
- Total investment is expected to increase to 739 billions OMR .



Fisheries

- Share of the sector in GDP is 0.5% and is expected to achieve 0.6% by 2020.
- Average growth is forecasted at 7% per annum.
- Total investment is expected to increase to 1.1 billions OMR .



Tourism

- Share of the sector in GDP is 3% and is expected to achieve 3.3% by 2020.
- Average growth is forecasted at 5.3% per annum.
- Total investment is expected to increase to 1.6 billions OMR .



Transport & Logistics

- Share of the sector in GDP is 6.2% and is expected to increase to 7% in the Plan.
- Average growth is forecasted at 5.4% per annum.
- Total investment is expected to increase to 6.1 billions OMR in the Plan.



Manufacturing

- Share of the sector in GDP is 9.8% and is expected to achieve 11% by 2020.
- Average growth in the 9th Plan is 7.8%..
- Total investment is expected to increase to 2.6 billions OMR.

Mining in Sultanate of Oman

*Mining as a catalyst for the growth of other core industries like power, steel, cement, etc.,
a general view of Oman mining activities, in 2020:*

more than 450 mining operations consisting of chromite, copper, aggregate, marble, building products, limestone, sandstone and manganese, gypsum, laterite and clay have been active.

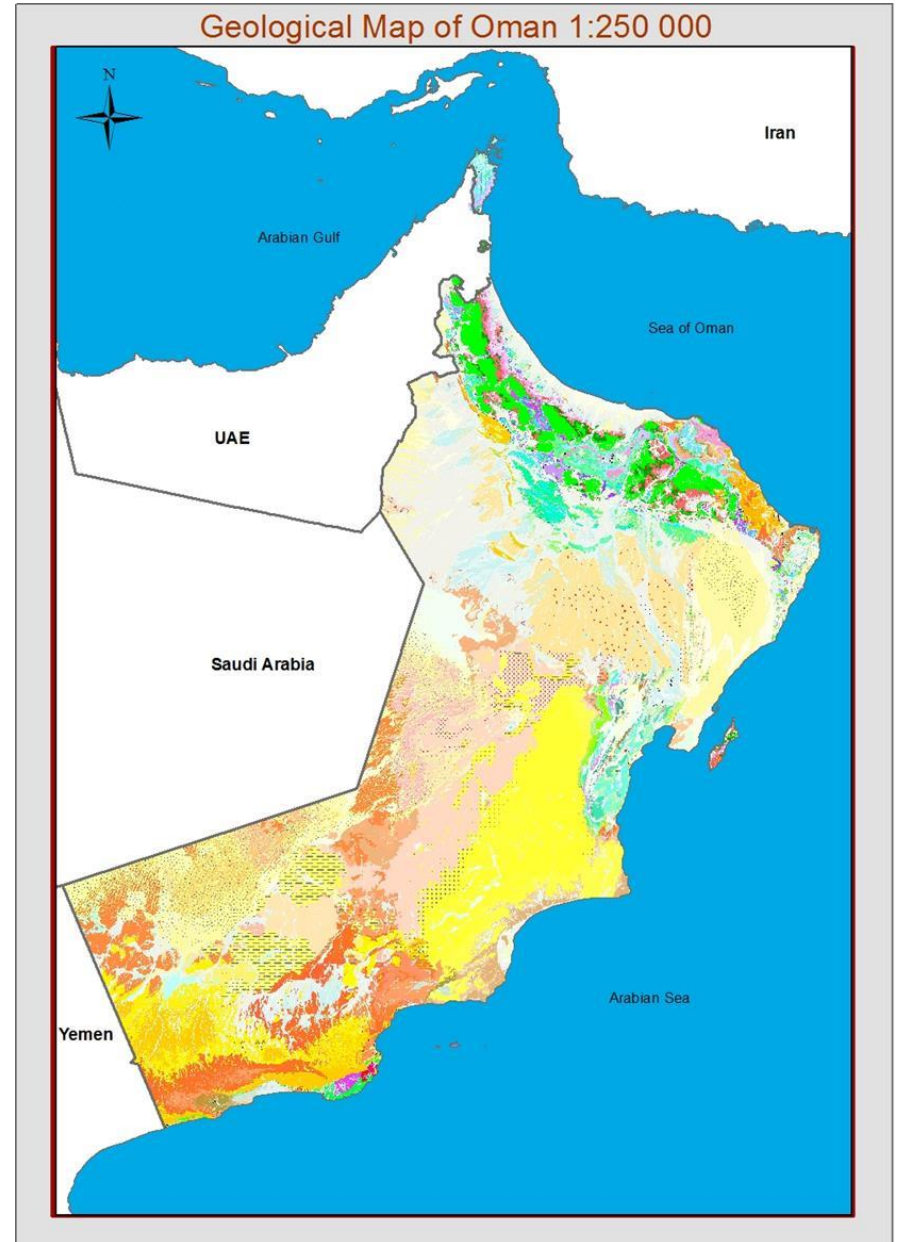
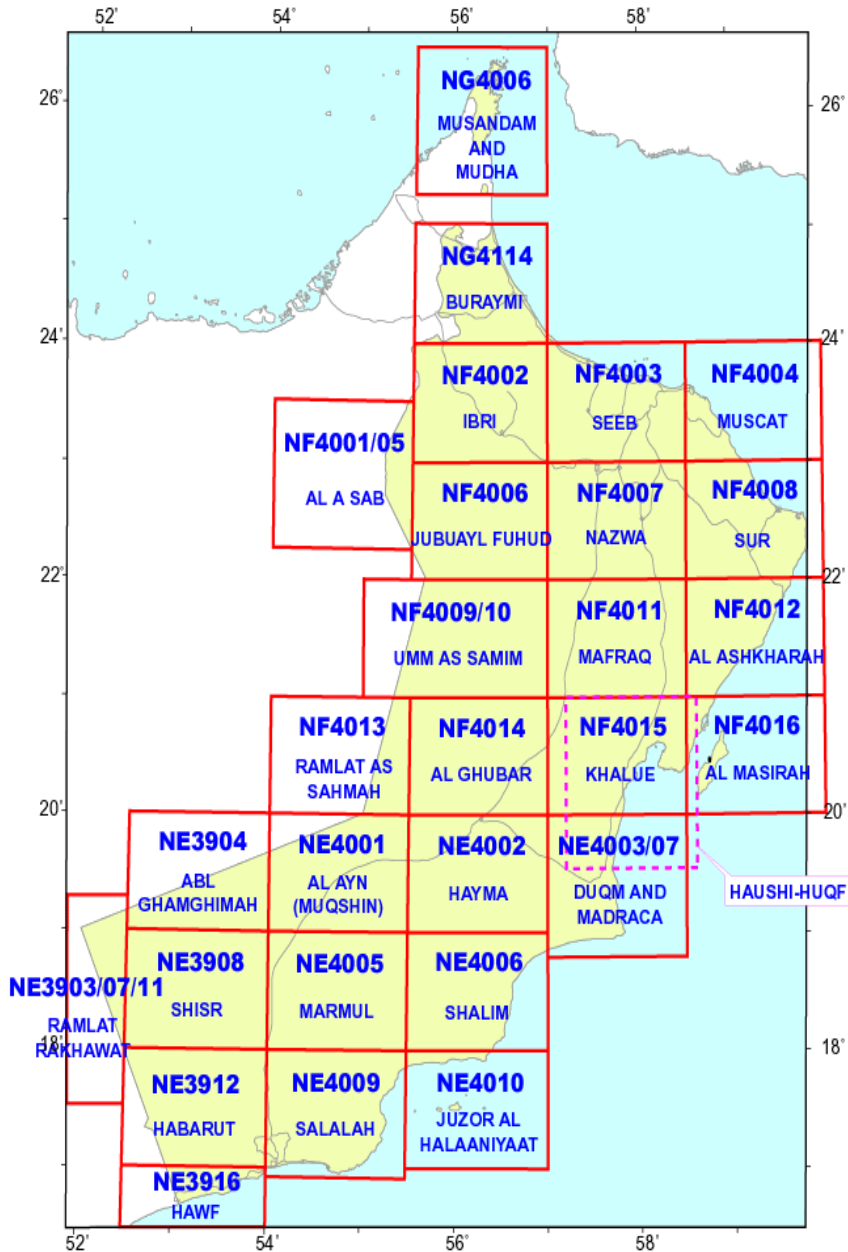


مروری بر پتانسیل های معدنی کشور عمان

An Overview to Oman Mining Potentials



Geological Map 1:250,000



Presence of Minerals in Oman

Metallic Minerals

- Copper
- Gold
- Chromite
- Magnesium
- Laterite
- Lead & Zinc

Non- Metallic minerals

- Marble
- Limestone
- Dolomite
- Gypsum
- Quartz and Silica
- Clay

Production of Metallic Minerals in Oman

Year	Chromite	Cu-smelter	Cu refinery	Aluminum	Manganese Metric ton	Crude steel	Laterite
1999	28,684	24,400	22,700	0	0		0
2000	26,004	16,818	17,171	0	0		0
2001	15,110	23,790	24,281	0	0		0
2002	30,150	24,220	24,000	0	0		0
2003	27,444	24,000	24,000	0	0		0
2004	13,800	18,000	17,000	0	0	84,000	0
2005	26,600	16,000	15,090	0	0	84,000	0
2006	50,400	25,000	24,543	0	0	84,000	1,740,416
2007	276,300	20,710	20,710	0	0	84,000	271,200
2008	407,822	14,000	13,940	0	0	84,000	295,012
2009	784,082	12,000	11,906	49,000	0	84,000	301,117
2010	636,482	16,000	15,090	351,000	0	84,000	366,797
2011	801,856	16,000	15,000	367,000	0	84,000	334,769
2012	616,625	111,408	15,000	367,000	41,300	160,000	721,620
2013	602,225	12,000	16,000	373,000	37,500	160,000	709,685
2014	787,645	12,000	16,000	360,000	49,000	160,000	572,378
2015	800,000	12,000	16,000	354,000	49,000	160,000	572,000
2015	800,000	12,000	16,000	354,000	49,000	160,000	572,000

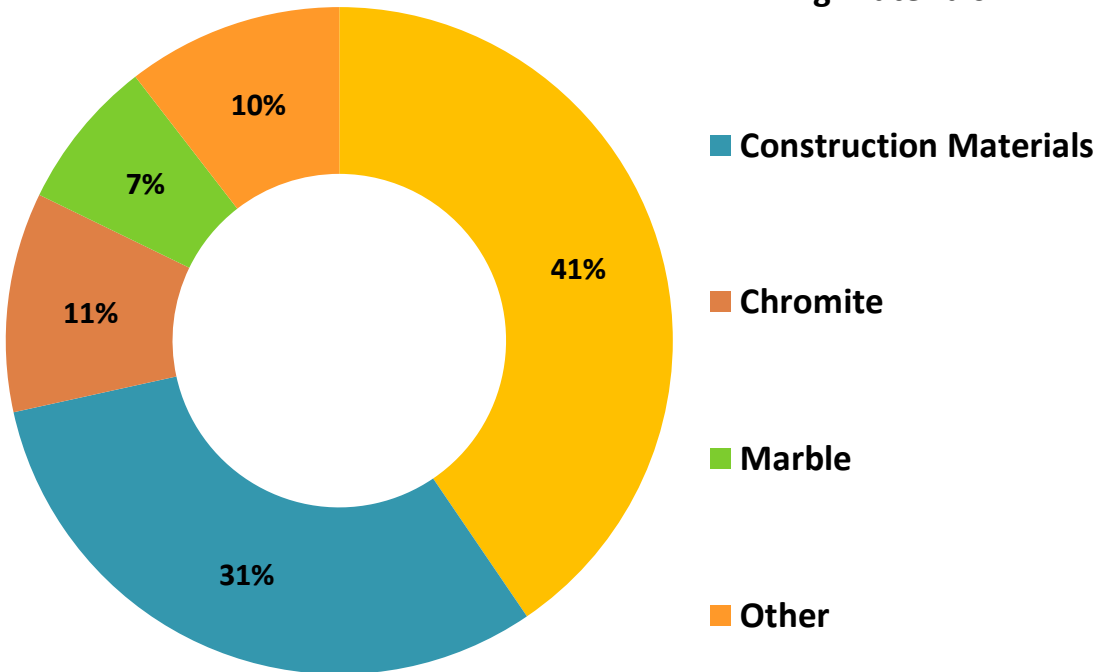
سلطنة عمان



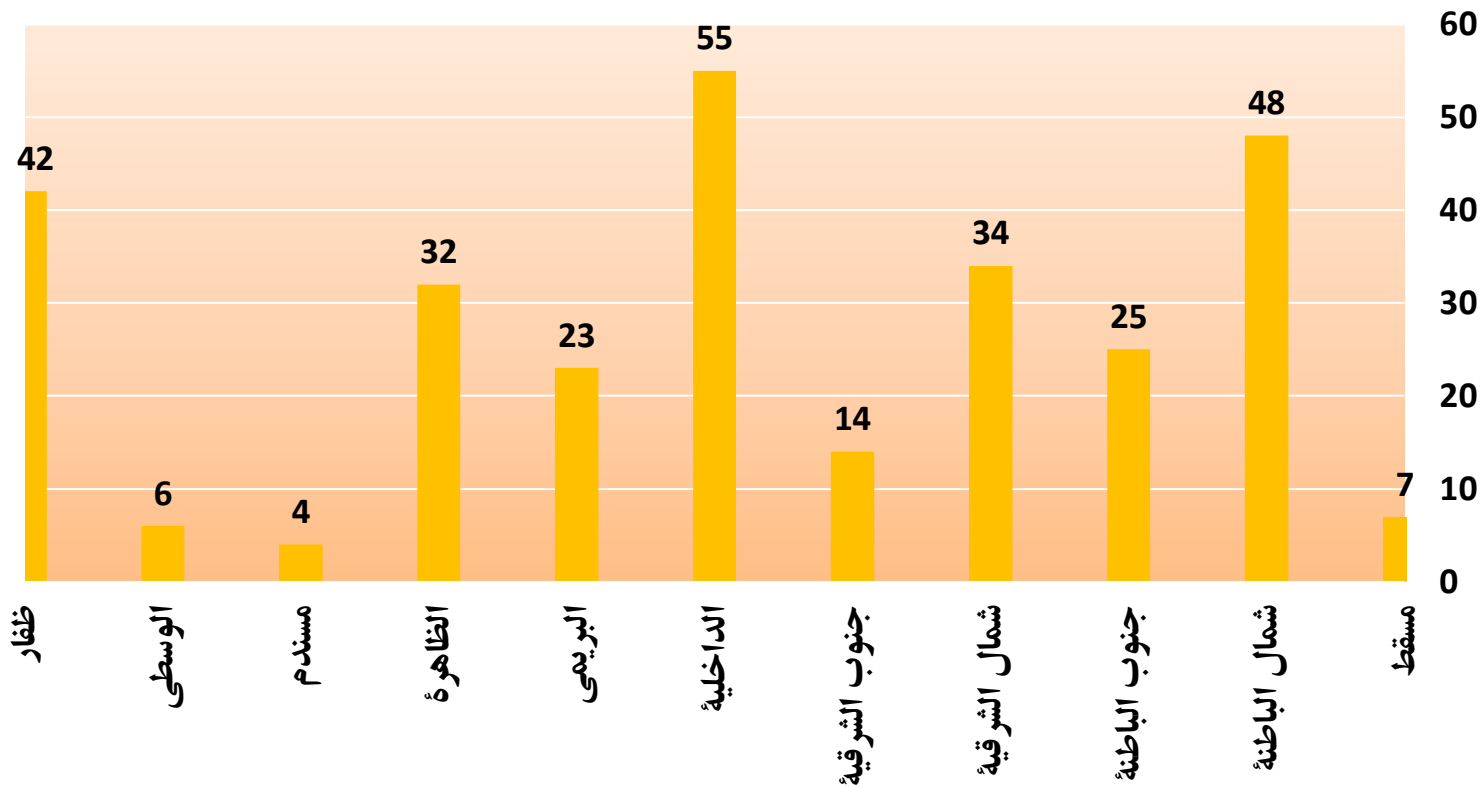
Number of Mining Licenses



Mining Licenses

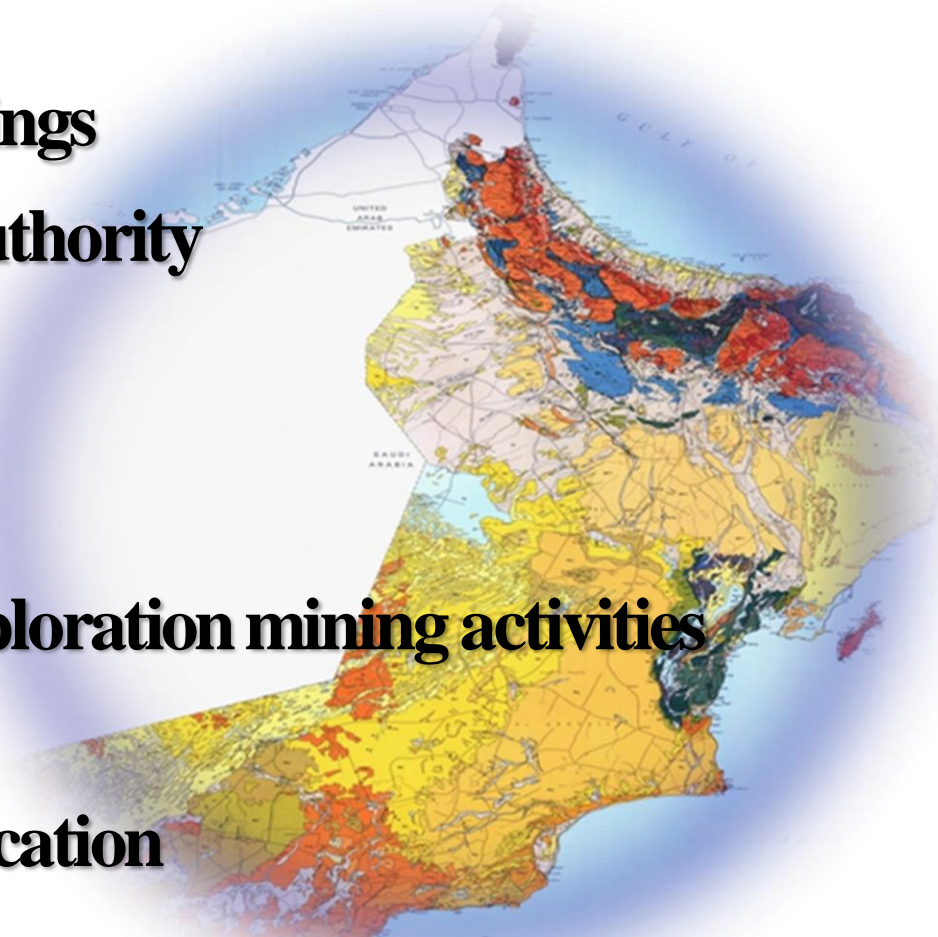


Number of Mining Licenses

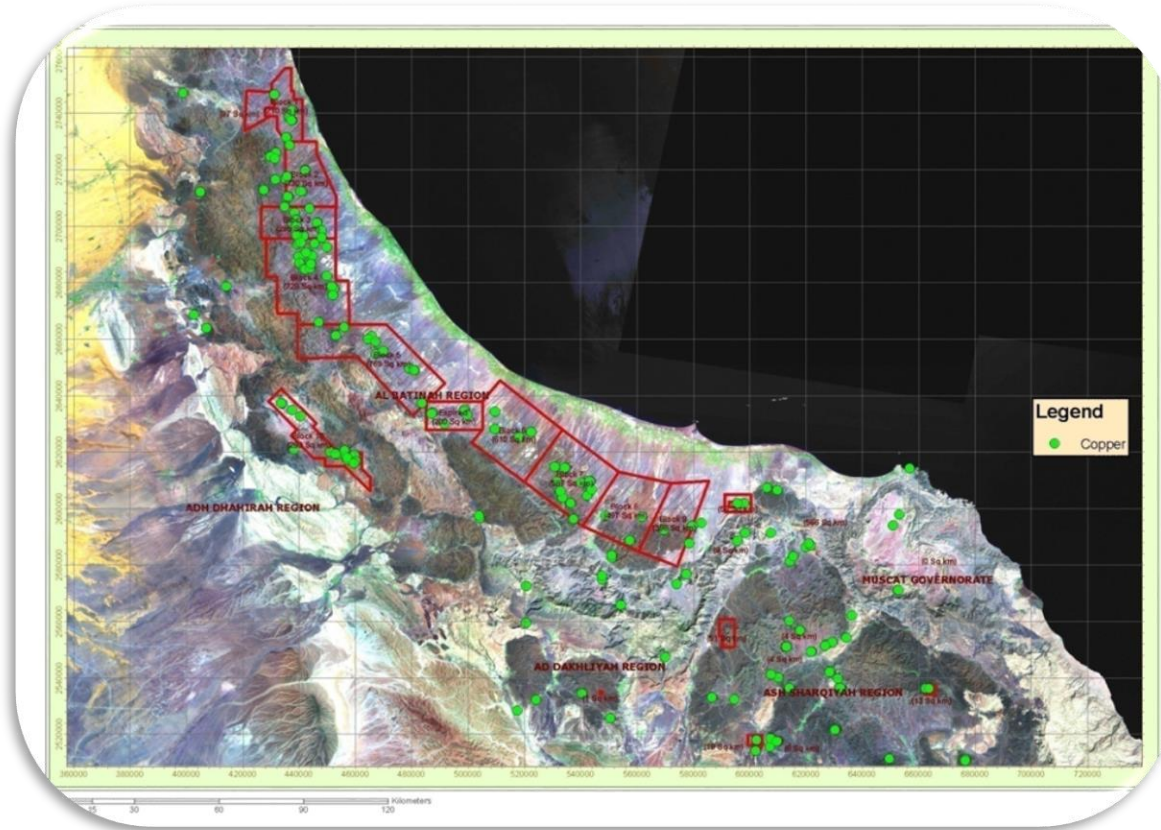


Do we have the investment's ingredients ?

- ✓ **Geological settings**
- ✓ **A regulating authority**
- ✓ **Legislations**
- ✓ **Logistics**
- ✓ **Studies and exploration mining activities**
- ✓ **Invest easy**
- ✓ **Country 's Location**
- ✓ **Ready-to-invest mining blocks**



COPPER



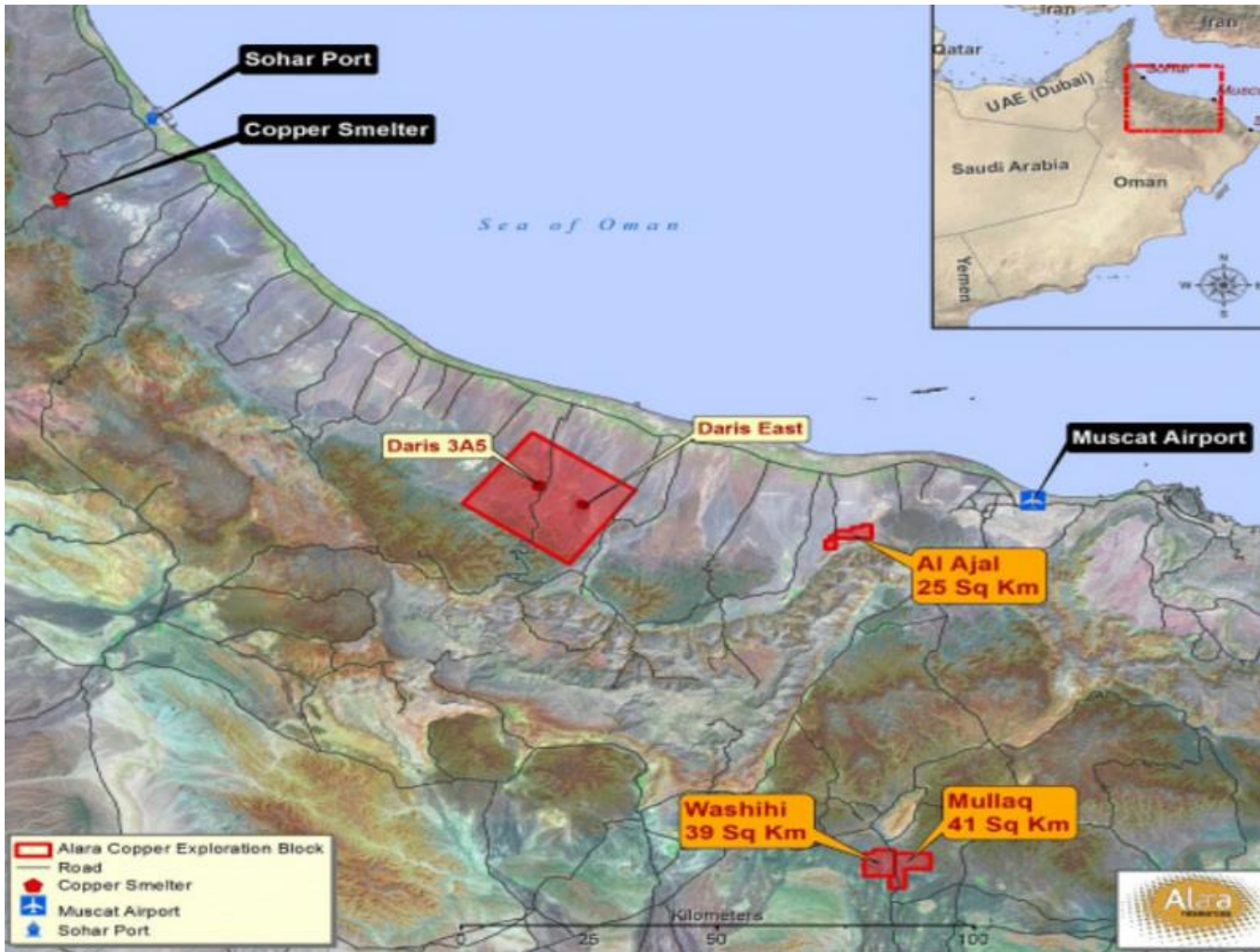
- Copper mainly occur in upper Ophiolite suite (volcanic sequence) in north Oman.
- The estimated exploration resource of copper is around 50 millions tons with grade between 1-1.5



Mining in Sultanate of Oman

- *Great tendency to explore and exploit **copper***
- *sizeable copper ore presence*
- *The latest released data of four concessions which are planned to mine copper at Yanqul, Khaboura and Samad confirms that more than 40 Mt of copper ore has been proved available as reserves with 1% - 3% Cu.*





Al Hadeetha copper-gold project location



Al Hadeetha

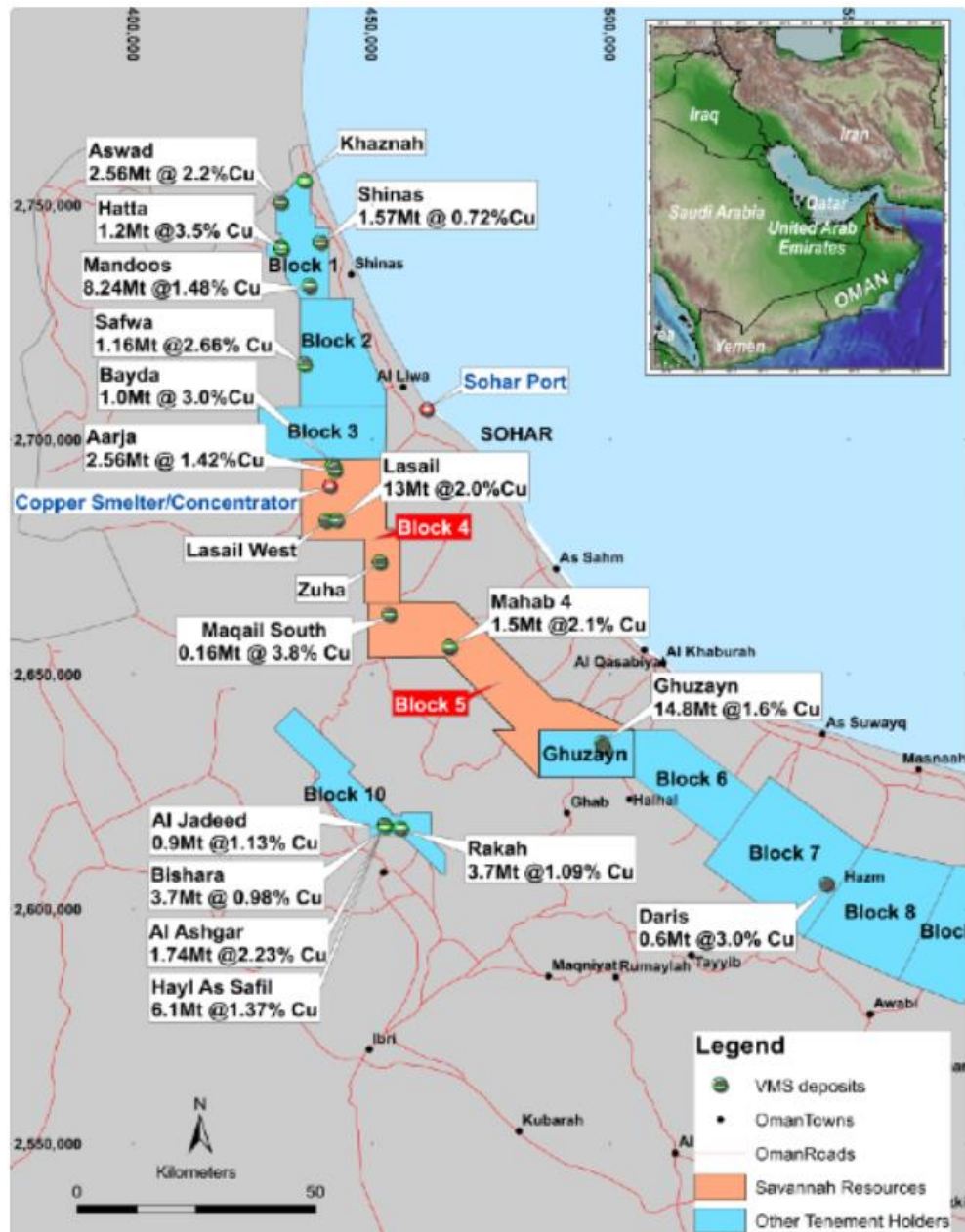
- Discovered in 2013, the Al Hadeetha copper-gold project occupies a total area of approximately 80km².
- The project includes three exploration licences -Washihi-Mazzaza, Mullaq and Al Ajal and one Washihi-Mazzaza mining license.
- The project is located approximately 160km away from Muscat, on Nizwa-Sinaw Highway, and approximately 355km from Sohar Port.
- The area is hosted by Samail Ophiolite, along with Hawasina nappes, which appear at the front of the Samail Nappe in Jabal al Hammah.
- The area surrounding the prospect is structurally complex, with majority portion filled with wadi gravels, and comprises outcrops of different geological units.
- Most of the copper mineralisation at Washihi is identical to the volcanic-hosted massive sulphide style with majority of copper occurring as stock work of sulphide mineral veins.
- is expected to produce a total of 10.1 million tonnes through its mine life, with 915,000t in the first year, 1 million tonnes from the second year to 10th year and 196,000t during the 11th year.
- The Washihi-Mazzaza license of Al Hadeetha project is estimated to contain grading at 0.88% copper (Cu) and 0.2g/t gold (Au).



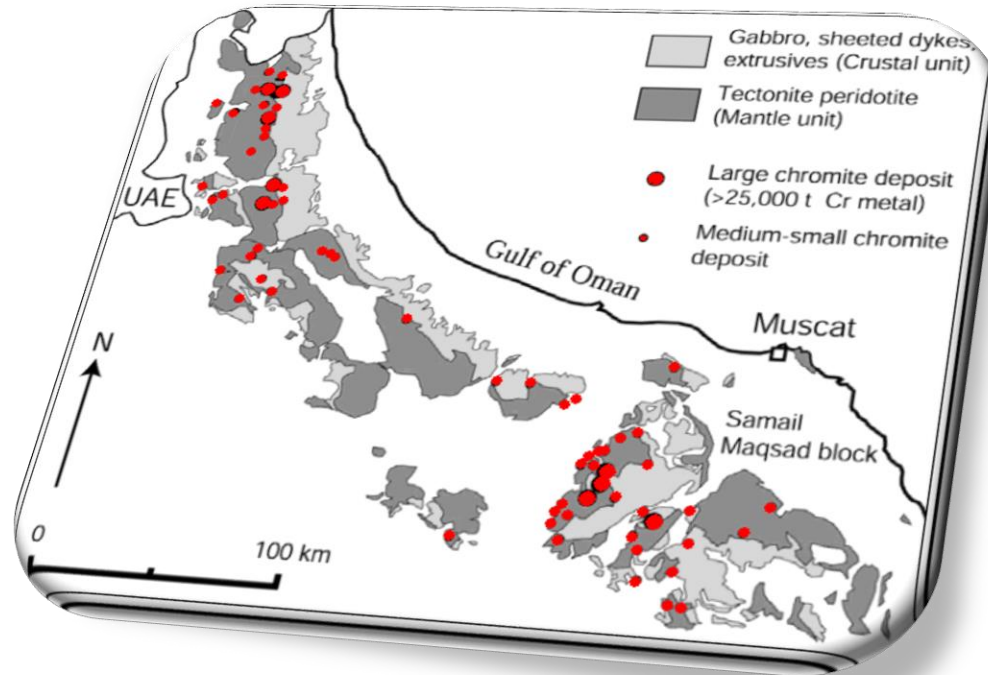
Block 4 and 5 Copper Projects, Oman

Savannah has rights to two blocks covering 1,004km² in the copper-rich, Semail Ophiolite Belt, a region proven to host clusters of moderate to high-grade copper deposits with gold credits and metallurgically simple ores.

The two blocks are located approximately 180km northwest of Muscat, and within close proximity to the export Port of Sohar.



Chromite



- Occurs in the lower part of the Ophiolite sequence (Dunite and Harzburgite).
- Extended in the northern part of Oman.
- Chromite grade ranges between (20-40%).



Chromite



- *About 2% of the world reserves of **chromite** or 30 million metric tons is located in the Sultanate of Oman.*
- *Chromite ores from Oman are mainly located in the mountainous region of Sohar, Sumail and Sur.*
- *The quality of metallurgical grade chromite ores from Sumail is the highest in terms of Cr_2O_3 content.*









Chromite prospective area

Location of 11 chromite prospective areas in Northern part of Oman

Legend

 Prospective Area

Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus






30 mi

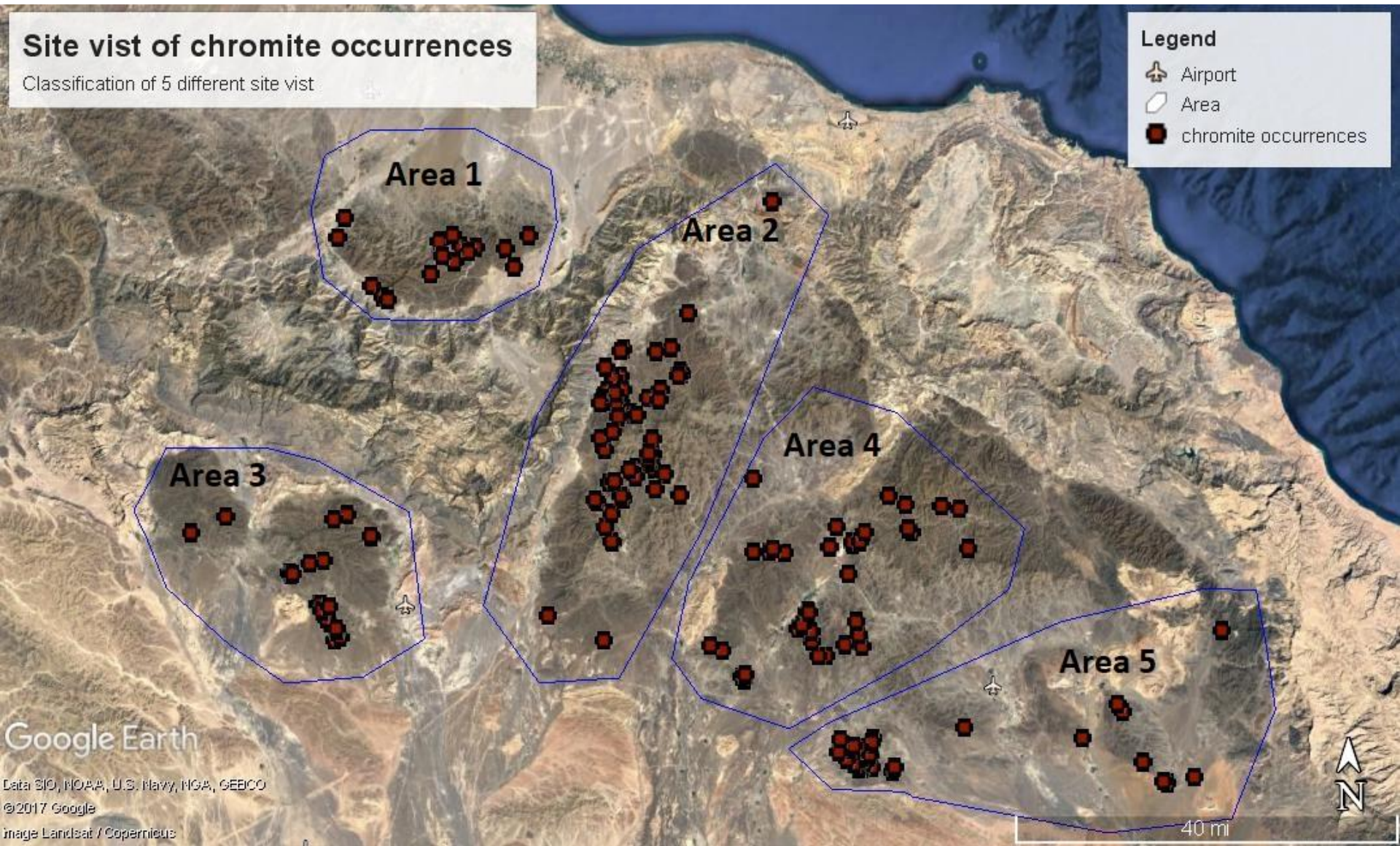


Site vist of chromite occurrences

Classification of 5 different site vist

Legend

-  Airport
-  Area
-  chromite occurrences



Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

©2017 Google

Image Landsat / Copernicus

AL TAMMAN INDSIL FERROCHROME LLC (FZC)



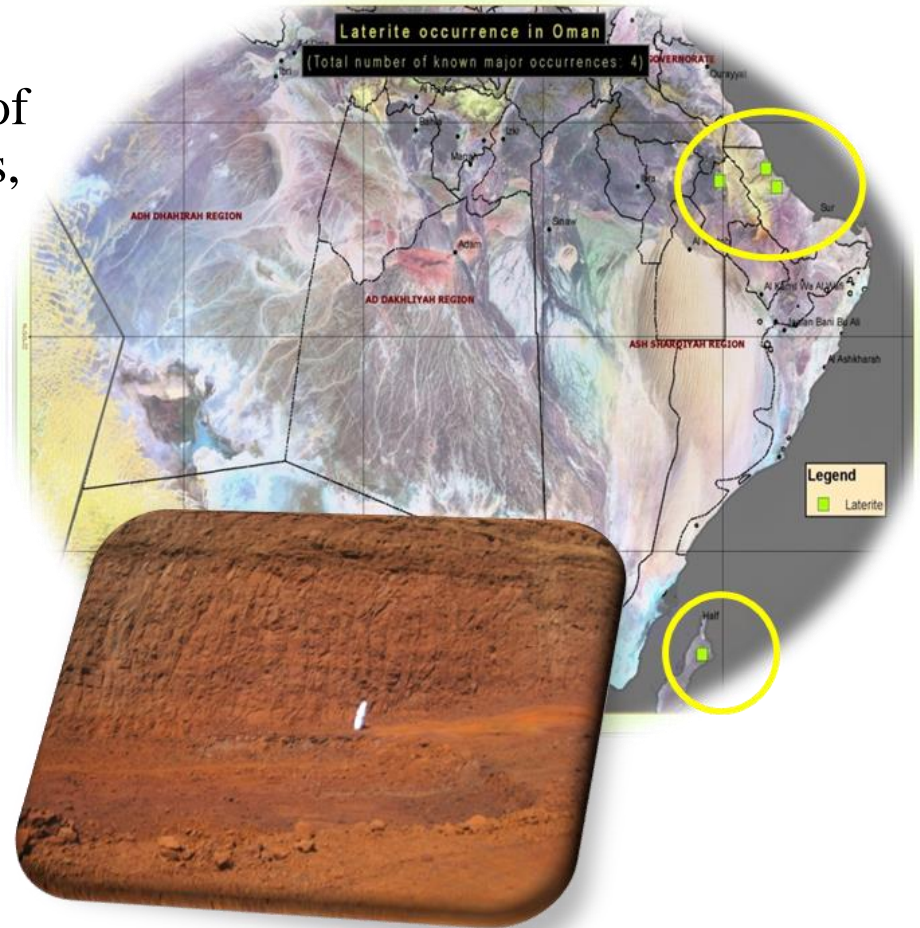
- Al Tamman Indsil Ferrochrome LLC (FZC), is a 50:50 JV between Muscat Overseas Group, Oman and Indsil Group of India.
- Has setup Oman's first Ferro Chrome smelter in 2013, at Sohar Free zone (SFZ) with a rated capacity of 75,000 ton per annum.
- Oman is a major exporter of Chromite Ore, accounting for 10% of the total world production of this mineral.
- Abundant mid-grade Chromite Ore deposits, coupled with availability of cheap energy and proximity to Sohar port makes this venture ideally positioned to showcase the capability of Oman as a leading supplier of Ferrochrome.



Laterite (Iron oxide)



- Deposits mainly in wadi Naam Al Qabil
- Resulting from Chemical weathering of ophiolitic rocks: gabbros, serpentinites, peridotites
- Iron content often $> 50\%$.
- Nickel content and reserves may be substantial and economic, but need more study
- Further potential for Aluminium, Cobalt



Basalt, Iron Ore, Manganese

- *The Sultanate is planning to revive a cluster of reserves of **basalt rock** which has the potential to evolve into a global hub for the production of basalt fiber-billed by experts as the ‘Green Industrial Material of the 21st Century’.*
- ***Iron Ore** and **Manganese** are other mining potentials of the Sultanate.*



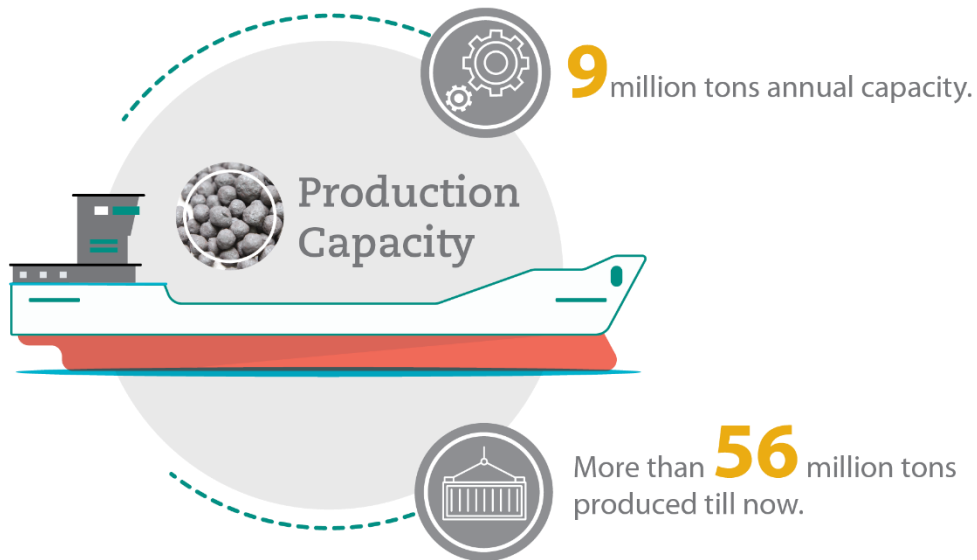


One of the world's largest mining companies in iron ore, nickel and pellets production operating in around 30 countries across 5 continents.

Established its Middle East office in Oman in December 2007 with an aim to expand its presence in key regional markets

Constructed a Pelletizing Plant and Distribution Center in Sohar

With an investment of US\$ 2 billion



Distribution and handling capacity

Distribution centre with handling capacity of

40 million tons per year.

Through 2018, **987 vessels** have been berther at our port.

More than **132 million tons** of iron ore and pellets have been handle in our distribution center.

400,000 tons handling capacity each



VALE

Why Oman

Proximity to the market: Middle East is one of the biggest producers of reinforcing bar (rebar) and pellets

A deep-water port: Sohar is an unique deep-water port in the region. It is able to receive our 'Valemax' vessels which have a 400,000 ton transportation capacity.

Strategic position: Oman has a strategic location geographically close to Europe, Asia and Africa. As well, Vale are able to transport its products regionally being located outside of the Strait of Hormuz.

Business oriented environment: Oman offers a competitive environment for International investors. It was ranked 12th for Government Efficiency, according to the World Economic Forum



Oman's First Manganese Project

- *The manganese upgradation plant in Samayil started on March 1, 2018.*
- *The processing capacity is around 15,000 tonnes per month*



Limestone, Marble & Dolomite

Limestone :

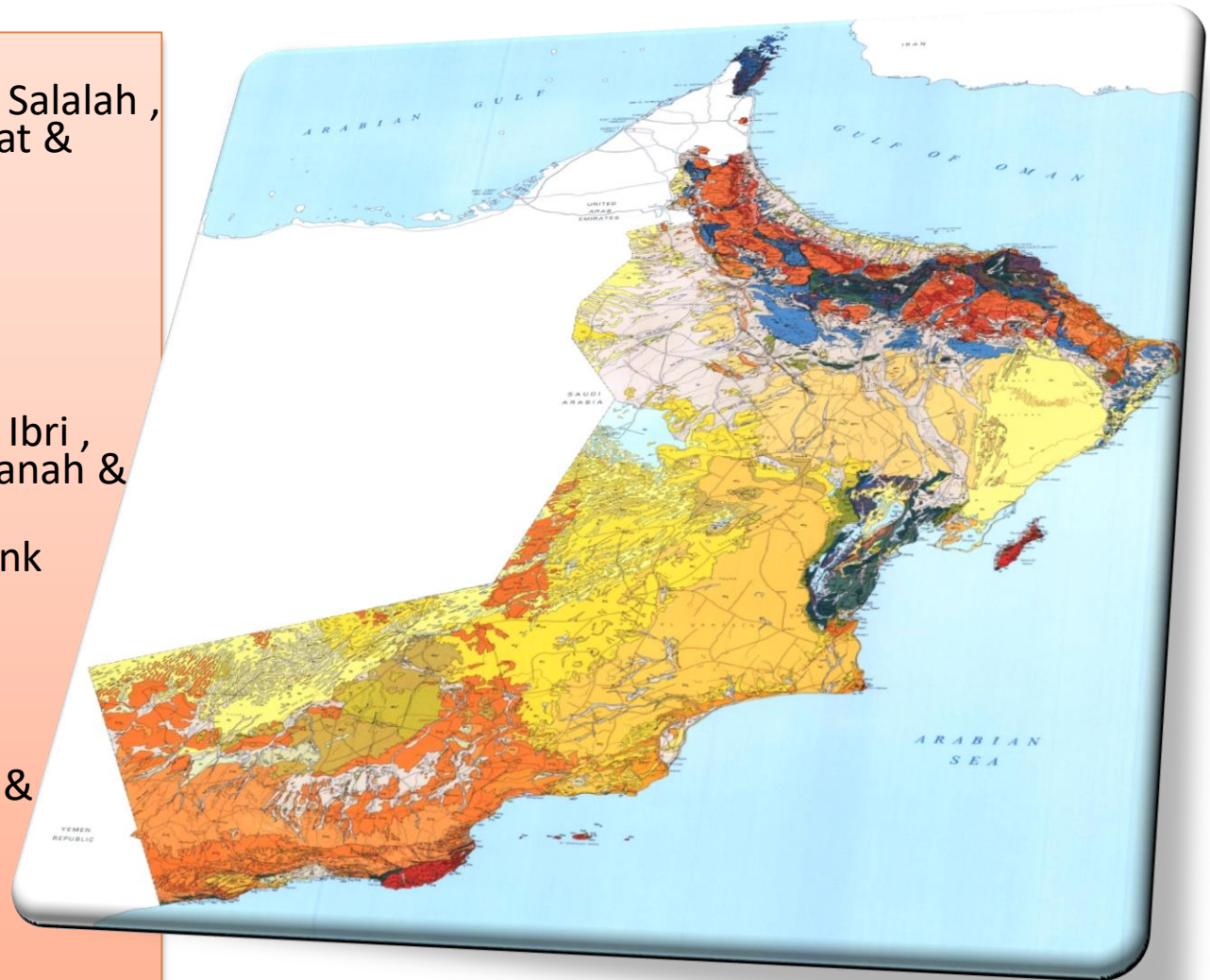
- Deposit mainly in Salah , Dunk, Sur, Quriyat & Duqum
- Huge Reserves
- CaCO_3 up to 99%

Marble:

- Deposit mainly in Ibri , Nizwa, Bahala, Manah & Alqbil
- White, Beige & Pink colors

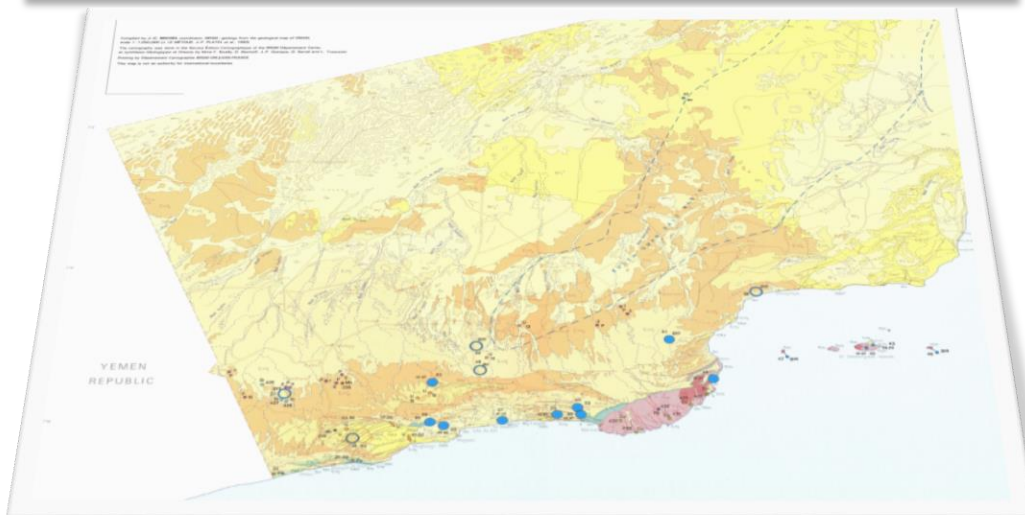
Dolomite:

- Deposit mainly in Quriyat, Muscat & Duqum
- Huge Reserves
- MgO up to 21%



Gypsum

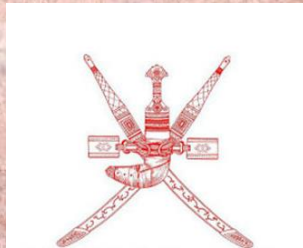
No.	Deposit Location	Reserve	Gypsum%
1	Shuwaymiyah	900Mt-1Bill t	Up to 98%
2	Thumrait	200-400Mt	>85%
3	Suddah	100-400Mt	>85%
4	Thakabayt	1-50Mt	>85%
5	Ghaba	0.5-2Mt	>85%
6	Buraymi	30,000-50,000t	>97%



Limestone, Marble & Dolomite

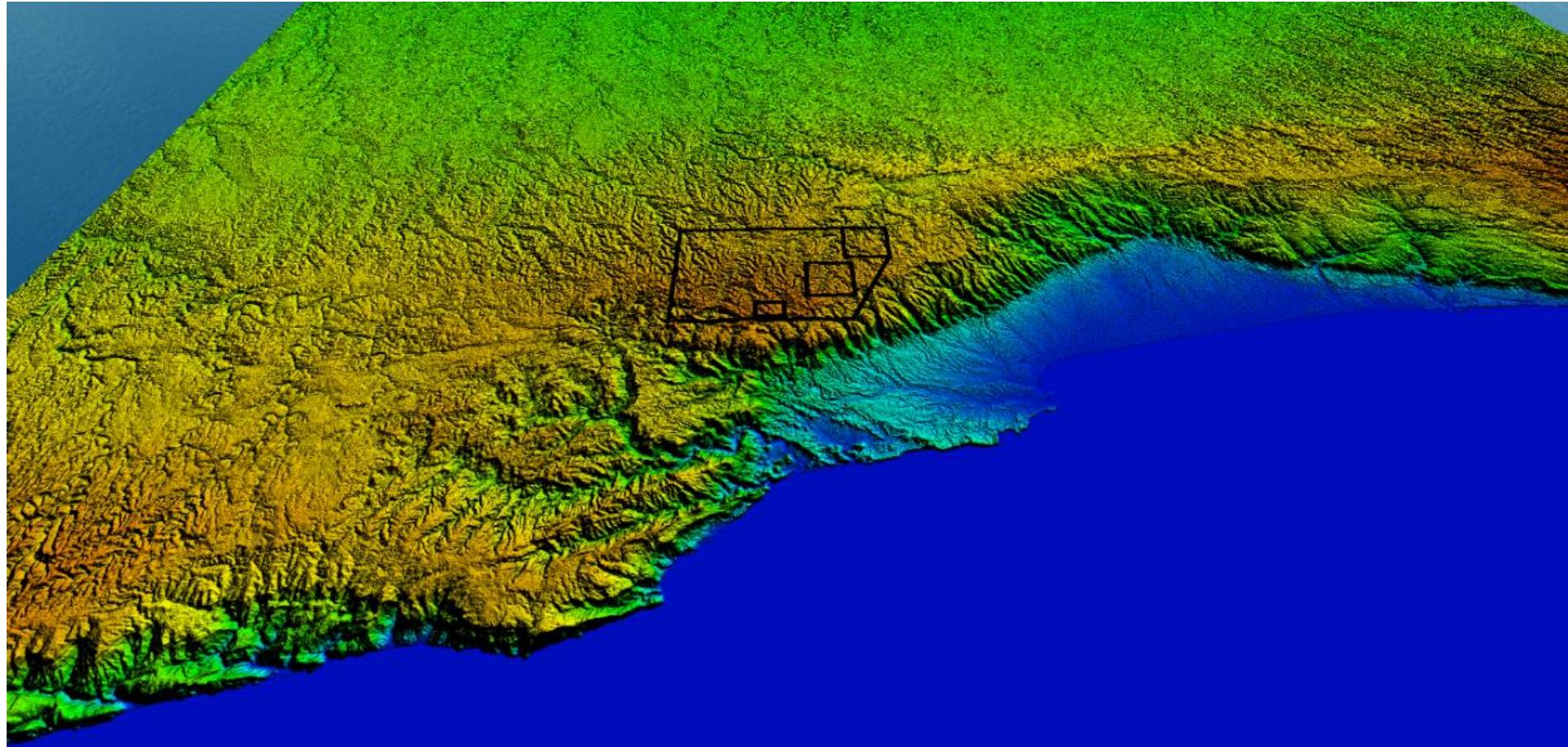
- *Oman is expected to be the largest exporter of **gypsum** by 2018*
- *With **gypsum** resources estimated in excess of one billion metric tonnes, Oman is well-placed to meet the rising global demand for this commodity.*
- ***Marble** deposits are distributed over several areas of the Sultanate, notably in the wilayats of Ibri, Bahla, Sohar, Dhank, Ibra and Salalah.*
- *In Dhank and Sur, government-commissioned prospectors have pinpointed sites believed to hold potentially hundreds of millions of tons of **marble** and tertiary **limestone** spread over several square kilometers.*

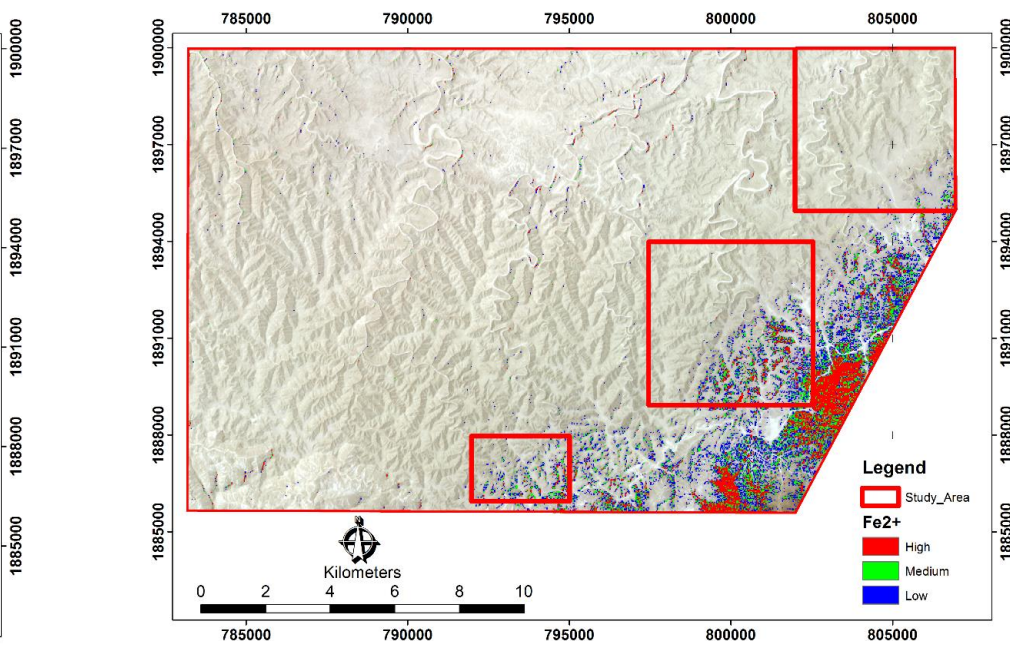
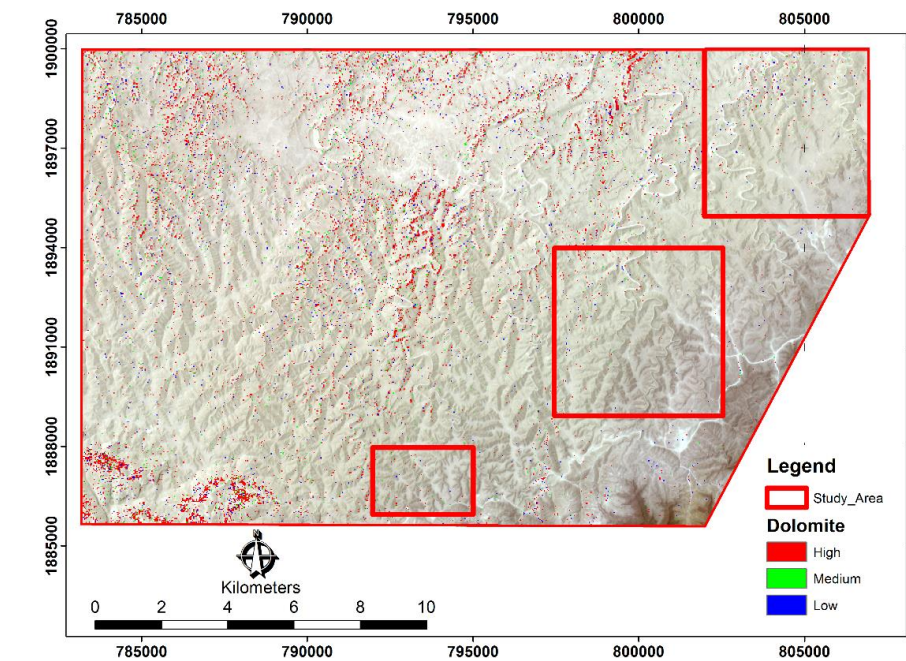
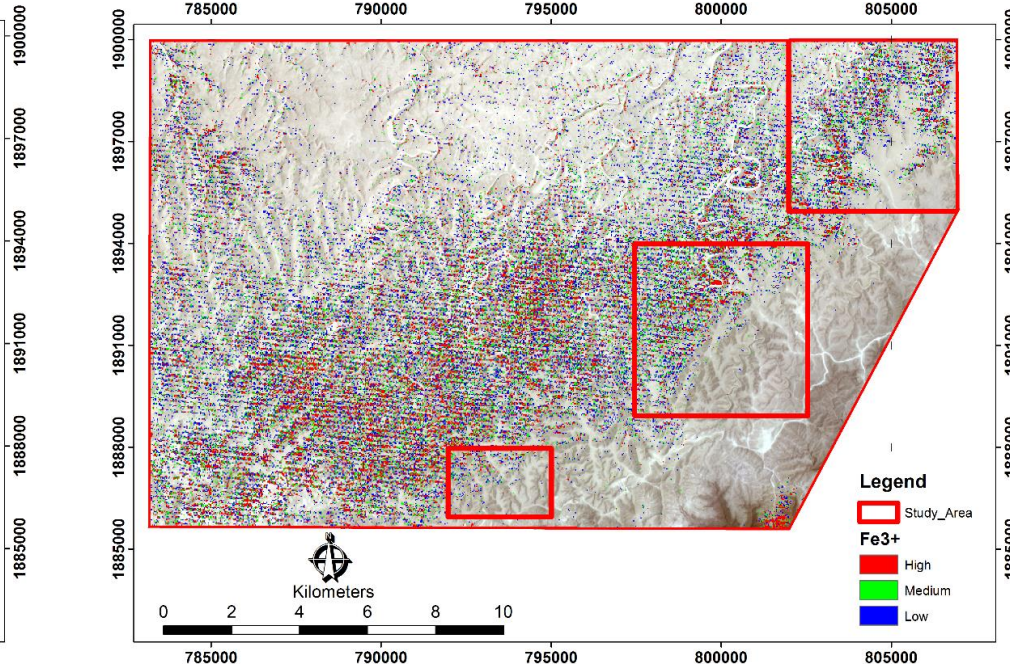
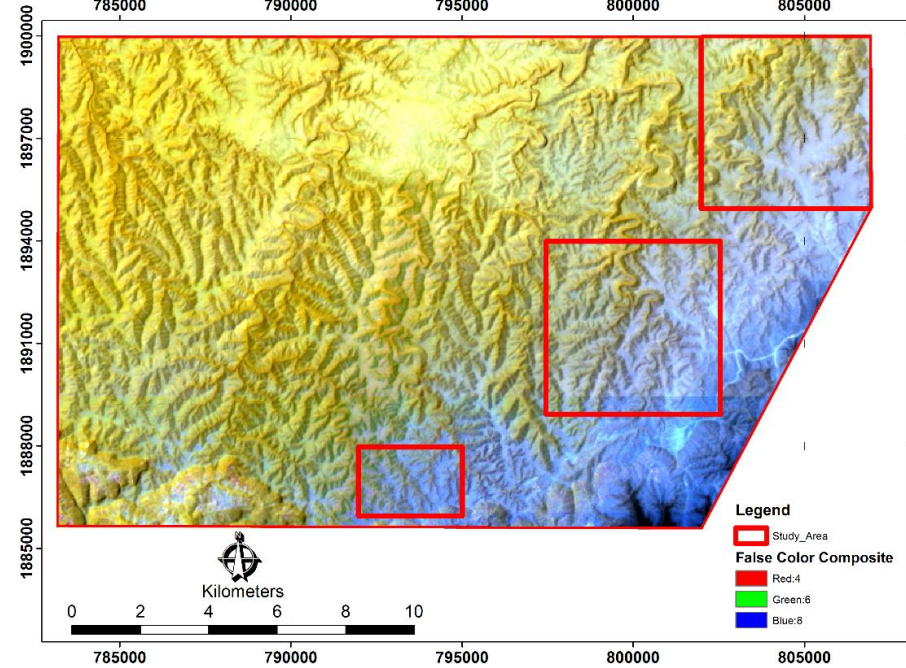


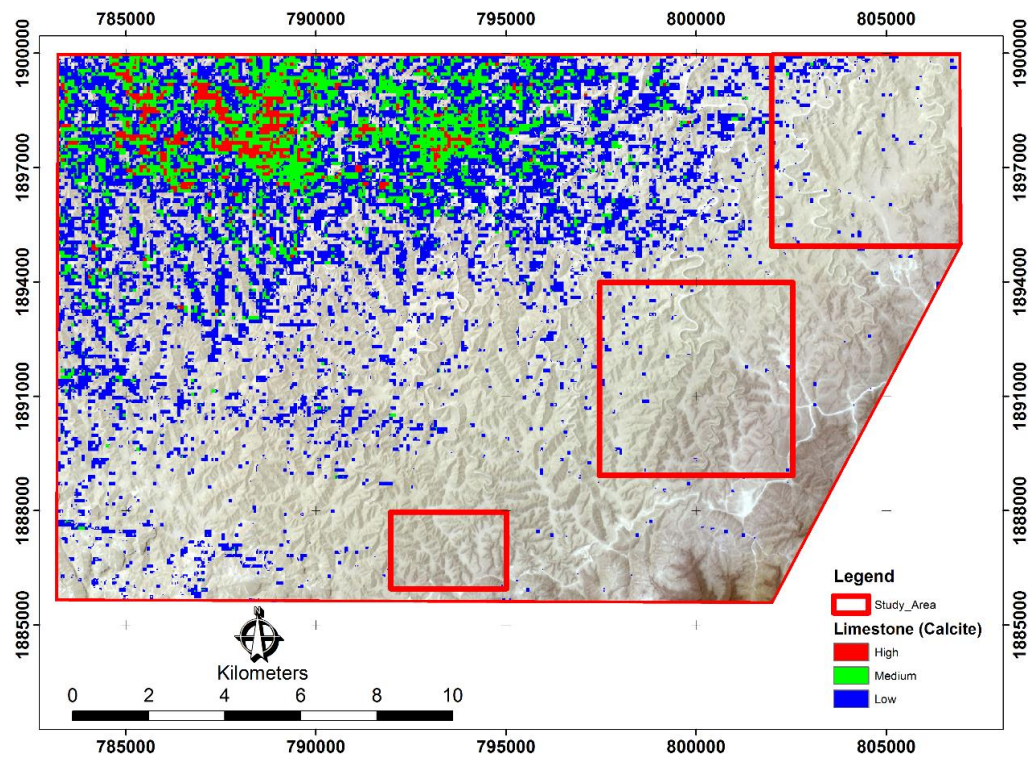
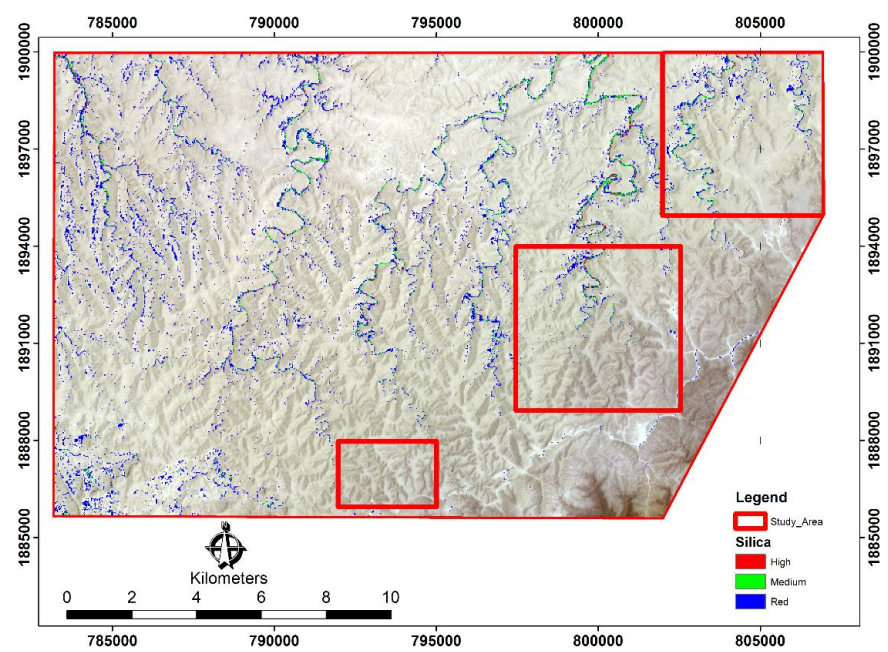
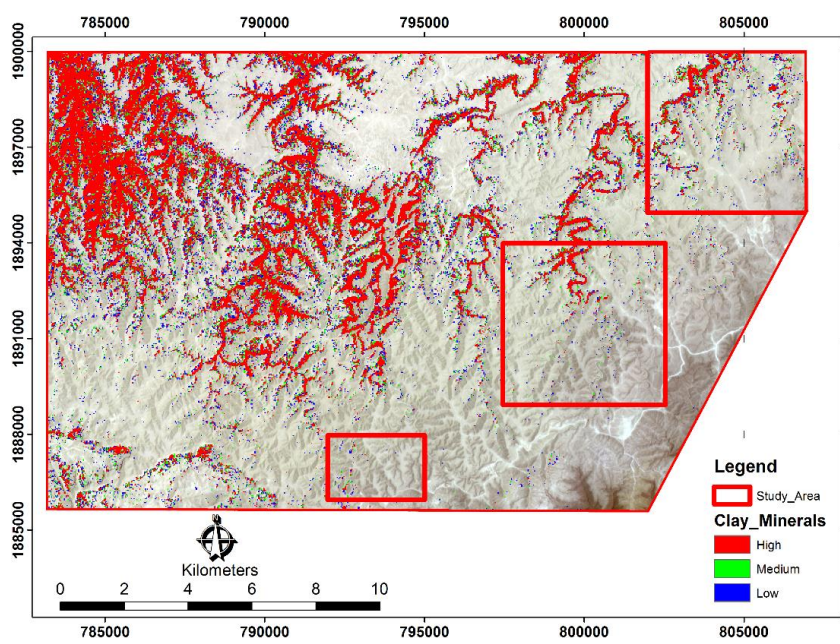


Public Authority for Mining (oman)

Study on Limestone Occurences in Azakdat and Western Uyun





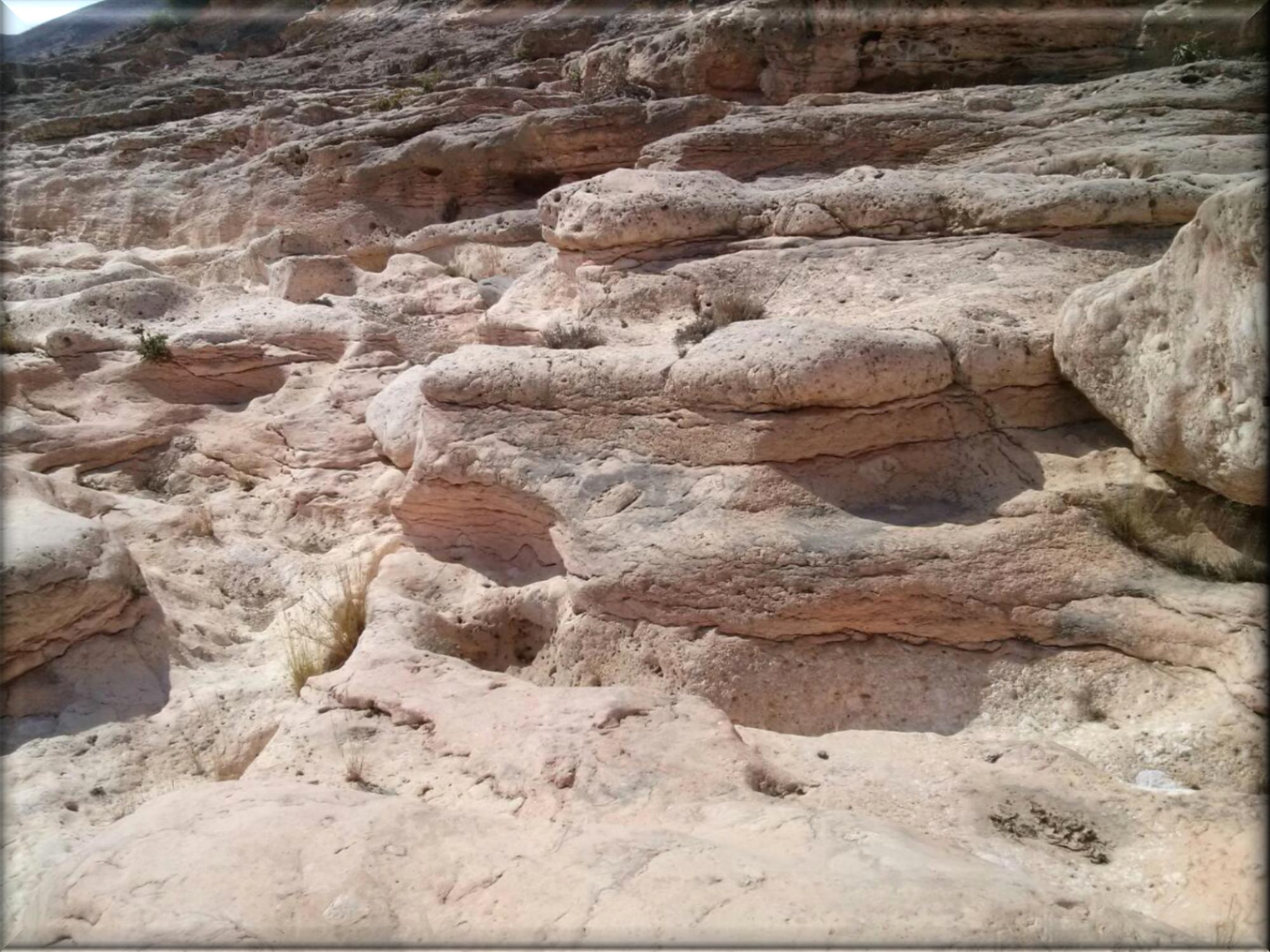


Evaluating the resource quality as a limestone mineral and rock and estimating its quantity for sustainable commercial production.

Zoning of limestone in three categories:

- 1. “general site for building materials Breakers”*
- 2. “value-added industries site”*
- 3. “general site for civil companies”*





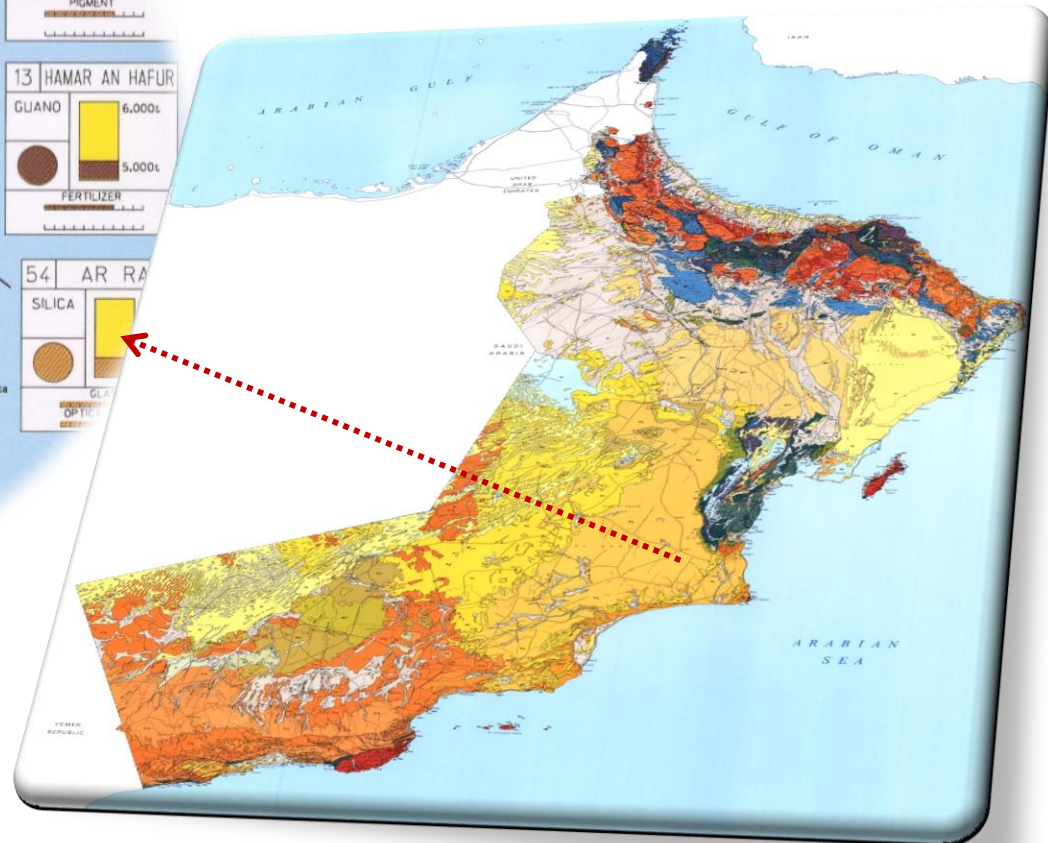
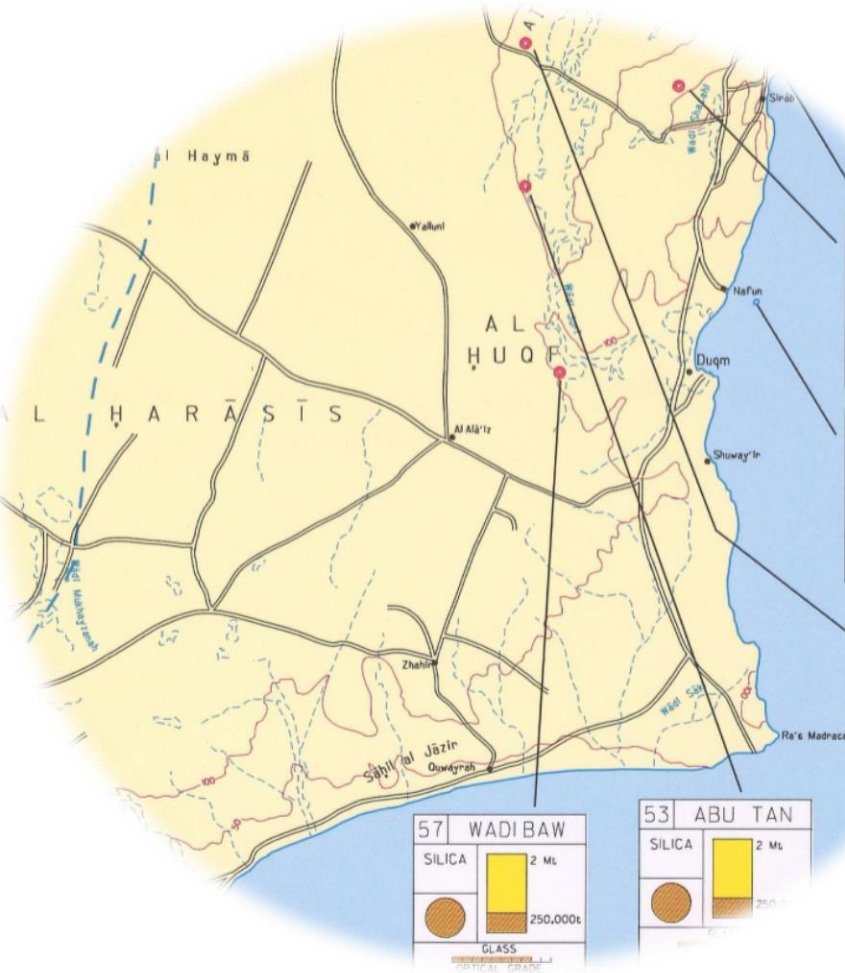






Silica

Estimated Reserves	SiO ₂ %
35 Mt	>98%



Silica

*Oman has all of the key ingredients necessary to attract international investment in the manufacture of **silicon**.*

*The discovery of a “very good” deposit of **quartz** in Saih Hatat makes for a promising starting point to explore the overall viability of setting up a silicon smelter in the Sultanate.*

*Estimated to hold about 4.5 million tonnes of **silica quartz**, the deposits display chemical characteristics that make it suitable ,as a raw material, for silicon production.*





مروری بر آخرین قوانین و مقررات معدنی در کشور عمان



Over view of Oman New Mining Law

A new mining law has been issued by PAM & under the execution process

- Clear and transparent.
- Increase the period of the mining licenses.
- Identify mining blocks.
- Facilitate the procedures for obtaining mining approvals (One-stop-shop).
- Acceptance of the application depends on the added value.
- Contribute to community development.
- Strengthen the mining database.
- More detailed description about licenses.
- Clearer penalties and fines.



Oman adopts new Mining Law

- *Oman's long-awaited new Mining Law comes into effect on 14 March 2019, bringing in hopes of attracting new investment and revitalizing its mining industry.*
- *The mining industry has been targeted as one of five key sectors to drive Oman's economic growth and diversification.*
- *Concurrent with the passage of the new Mining Law, the Public Authority for Mining ("PAM") announced the identification of new mining projects and initiatives with an investment value of over \$2 billion.*
- *The new Mining Law provides a far more robust framework for the mining sector intended to provide more incentives, transparency and certainty to investors, while at the same time balancing the PAM's oversight role, the interests of local communities, the prioritization of local employment, the protection of the environment and the enforcement of investment commitments.*



The Role of the Public Authority for Mining

- *PAM, established in 2014 to regulate the sector as the competent mining authority*
- *The competencies of the PAM are more clearly outlined in the new Minerals Law*
- *It is granted broad regulatory and supervisory powers, including:*
 - *The right to issue exploration, prospecting and exploitation licenses and mining concessions,*
 - *To conduct inspections of mining activities*
 - *To ensure compliance by the license holder with the terms of the license and enforcement powers in the event of any non-compliance*
 - *It has the authority to seize private property from land owners in the name of the public interest, if there is a belief that the property may contain significant mineral wealth that may be of benefit to the national economy*



Licensing and Concessions

- *Licenses for exploration and prospecting* may be granted for one year terms, renewable for similar periods up to three years.
- The *license period for exploitation* is up to five years, renewable for additional similar periods. Concession agreements for large deposits may be granted for periods between 20 and 30 years.
- *License holders* may no longer hold on to their licenses without performing their obligations. The PAM has greater authority to terminate the license if the license holder fails to conduct the licensed activities or make the required investments within specified time periods. PAM may also terminate the license if the license holders fails to pay amounts due to the government or transfers its license without approval or otherwise breaches the terms of the license or the law.
- *License holders* have reporting obligations to the PAM, such as submission of monthly reports on extraction, inventory and sales, and quarterly reports on employees, processing, development and operations, as well as notifying PAM of any changes to their shareholding structure.
- It is strictly prohibited to carry out any mining activities without having a license issued by PAM. Person carrying out mining activities without a license are subject to penalties, confiscation of any produced minerals as well as possible criminal liability.



Royalties, rent and other payments amended to incentivize investments

- *The financial obligations for license holders and concessionaires have been revised. There are no set royalties or rent payments. The stated intent is to incentivize investments by establishing flexible royalty and rent payments that are tied to the economics of the project.*
- *The law does however set parameters, requiring license-holders to pay:*
 - *a minimum of 5% of the annual output of their mining activities in royalties (as opposed to a maximum of 10% under the old law);*
 - rent payments to be determined by PAM;*
 - *a financial guarantee amounting to 1% of the value of the budget allocated by the license holder for their exploration and mining operations; and*
 - *a contribution of 1% of the value of the annual output of its mining activities to support the local community in the area surrounding the relevant site.*



Spurring investment



- *Adoption of the Mining Law is a welcome development that will hopefully spur new investment in the industry.*
- *Investments need certainty, and the mining industry has been somewhat stalled while investors waited for the new law to be adopted.*
- *At the same time, PAM has been deliberate in drafting the new law, reportedly considering mining sector regulatory frameworks from around the world.*
- *Adoption of the new mining law demonstrates the Government's understanding that the legal and regulatory framework needed to evolve in order to attract new investments, while also protecting the public's interest.*
- *Within one year from the Mining Law coming into effect, investors should expect that correlated regulations will be also be adopted by PAM to compete the new regulatory framework.*





فرصت های مهم سرمایه گذاری معدنی در کشور عمان

Oman Mining Investments Opportunities



Oman Strategic Location In Mining Sector

- ▶ Location.
- ▶ Availability of raw materials
- ▶ Politic Stability.
- ▶ Infrastructures.
- ▶ Open investment policies.



Reasonable reasons for cooperation between Iran and Oman and defining common upstream and downstream mining industry projects:

- *Similarity of the geological history of Iran and Oman countries,*
- *Neighborhood of the two countries,*
- *Experiences and expertise of Iranian experts in the mining sector*
- *Logistics advantages of Sultanate of Oman,*
- *Abundant and cheap energy and human resources in Iran*





In case of joint mining investment:

the benefits and values created by each country for the other will be a contributory factor in facilitating successful mining cooperation between the two countries.



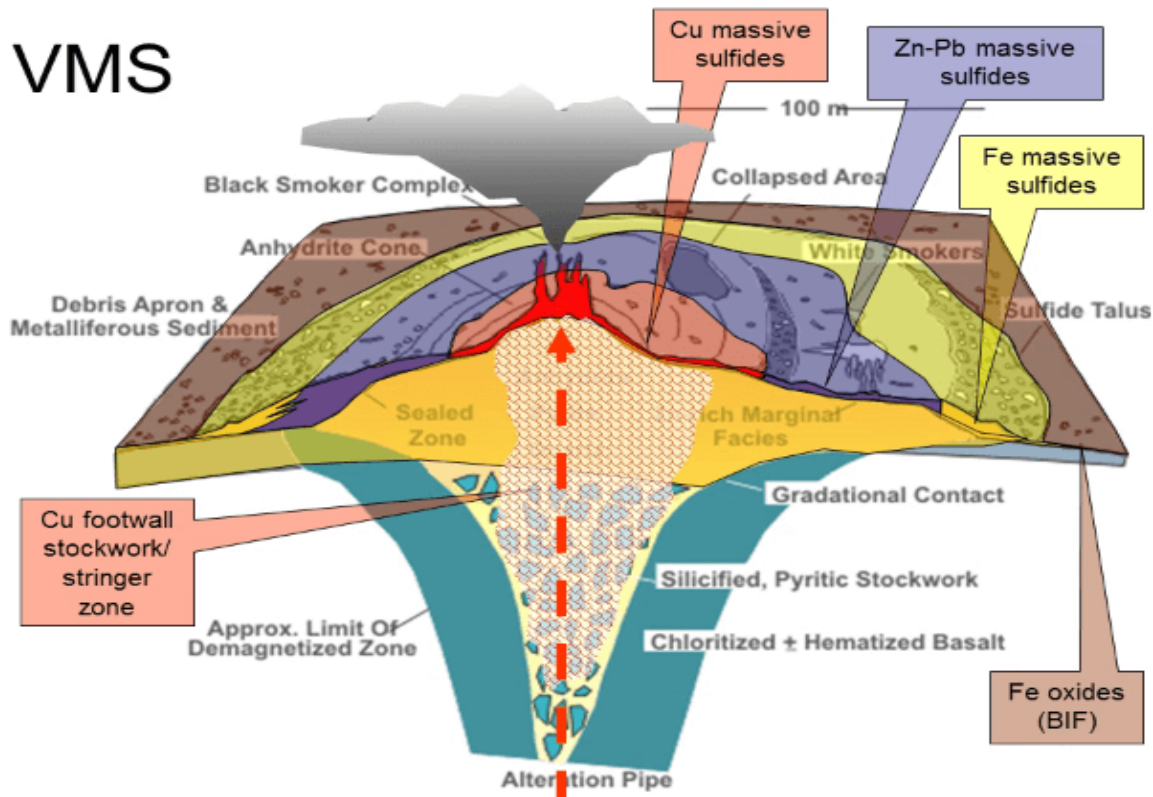
Joint Mining Investment in Iran and Oman

Exposed ophiolite geological outcrops in Oman mountains and southern part of Iran, Makran, containing similar minerals such as chromite, copper, gold, silver, lead, nickel, manganese, zinc, and etc.

Defining and promoting investment in related international projects in both upstream and downstream mining industries between IRAN and Oman could be highly recommendable and lucrative.



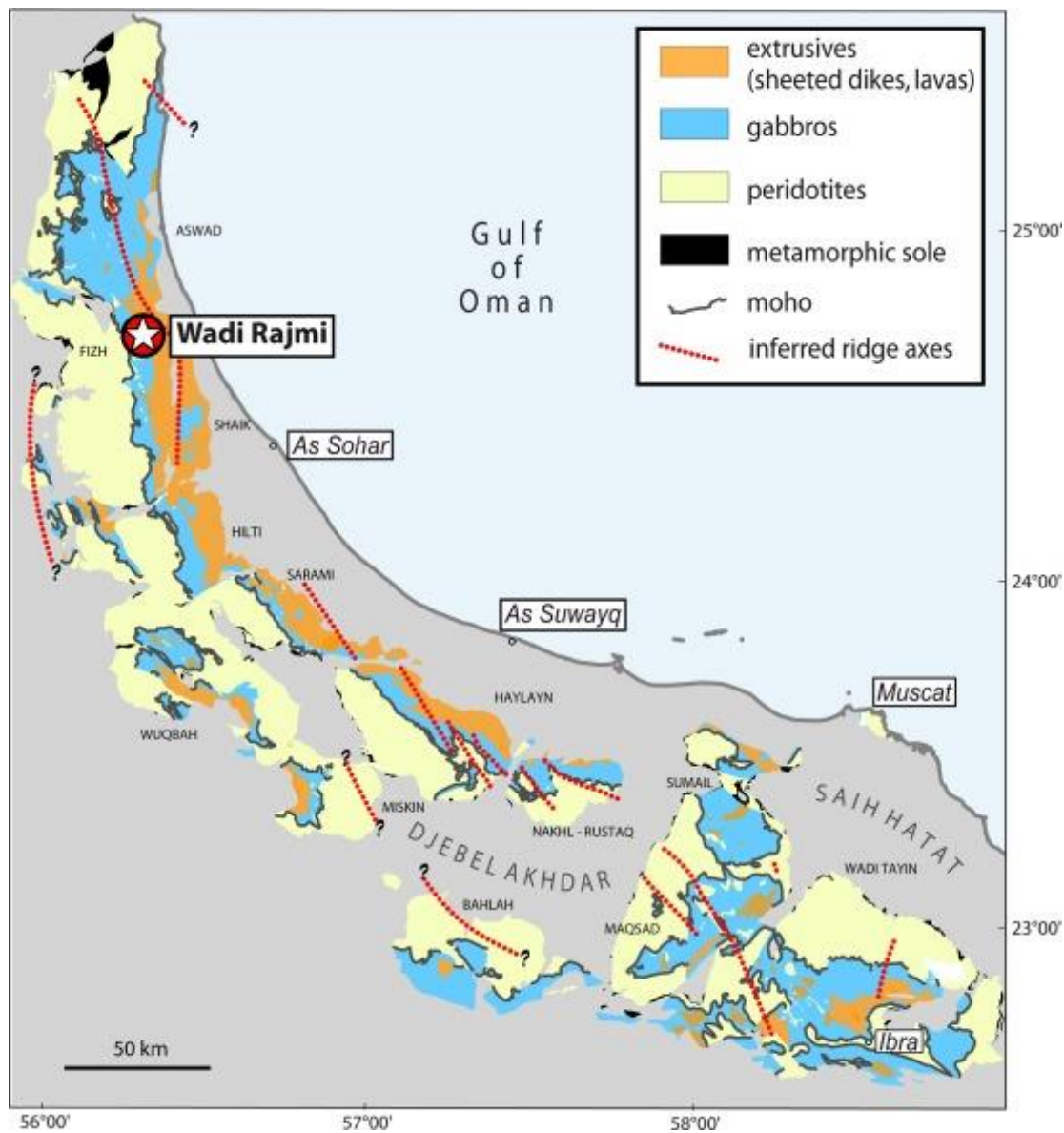
EXPLORATION OF VOLCANOGENIC MASSIVE SULFIDE DEPOSITS (VMS) IN OMAN AND IRAN



Outline of Cyprus type VMS

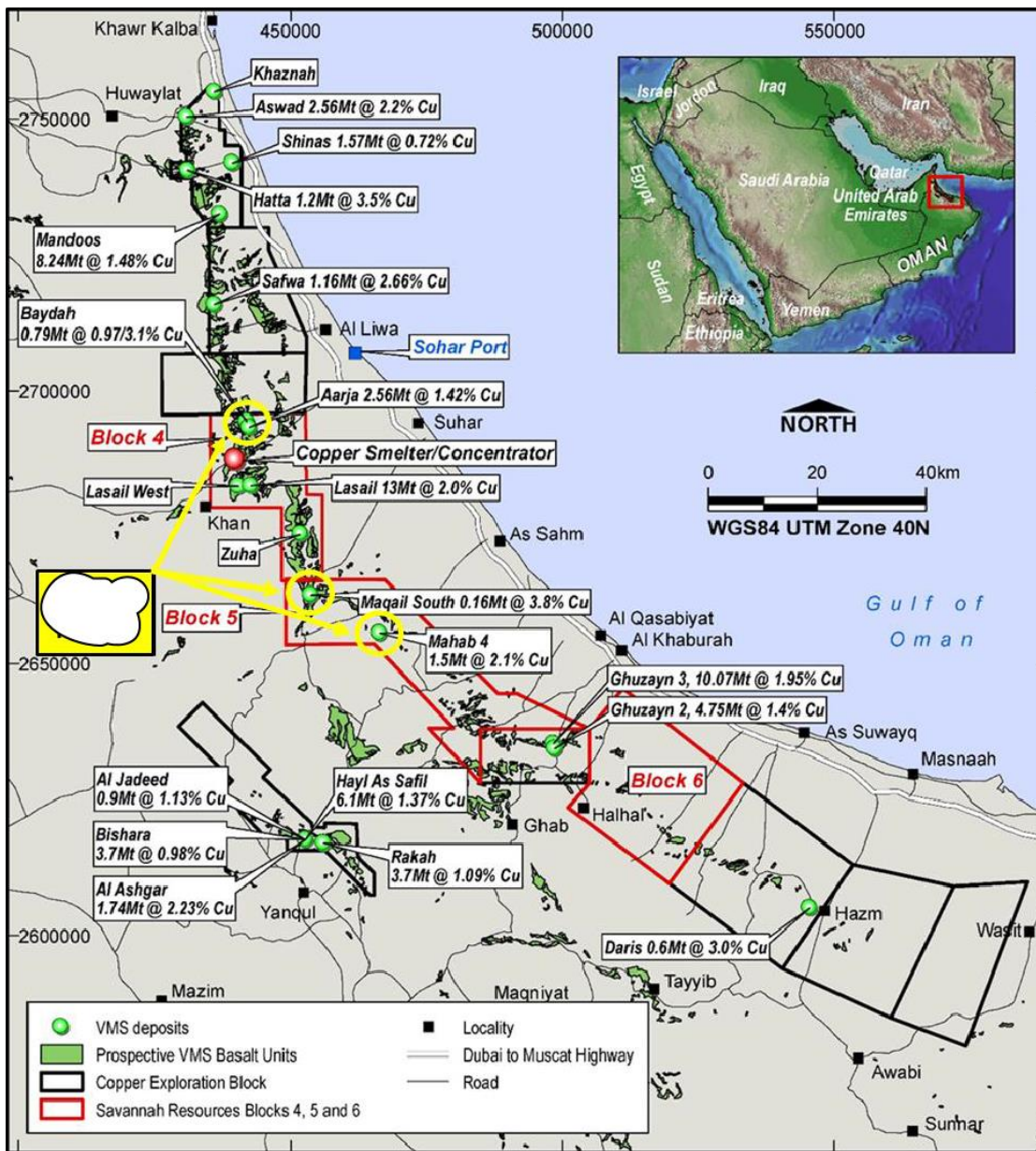
- *Ophiolite complexes are tectonically transported slices of ancient oceanic lithosphere, ranging in age from early proterozoic to paleocene, that occur in orogenic belts formed by convergent plate motions*
- *Ophiolite complete sections includes, from the bottom upward Tectonized ultramafic mantle rocks, layered ultramafic to mafic cumulate rocks, isotropic gabbros, a sheeted dike complex and a mafic section dominated by pillow lava*
- *Among 200 ophiolite suites recognized throughout the world, at least 25 contain significant VMS mineralization.*
- *Ophiolite-hosted VMS deposits form a significant base metal resource.*





Simplified geological map of the Oman ophiolite and location of the Wadi-Rajmi (Nicolas et al., 2000)





Location Map showing Position of Oman copper exploration blocks



Joint Mining Investment in Iran and Oman

Energy Industries:

Silico Metals (Ferro Silicon, Ferro Manganese, Ferro Chrome)

Refreshments (Calcine dolomite, Alumina Industry, Hydrated and cooked lime)



Joint Mining Investment in Iran and Oman

Mining:

Lithium, Potash(Bristles, Marine Water)

Recycling:

*Steel Production, Lead and Zinc
Production, Copper Production*





Metal & Industrial Mineral Processing Exhibition & Conference

10-11 March 2020

The Oman Metals & Industrial Minerals Congress 2020 will bring together influential decision-makers, industry analysts, mining & minerals operators, mineral processors, automation providers, construction software specialists, engineering consultants, EPC contractors, OEMs and investors, all on one platform. And all with the aim of sharing best practice and focusing on the specific opportunities that Oman has to offer, in the downstream mining & minerals sector.





مؤتمر ومعرض عُمان للتعدين
OMAN MINING EXPO

Oman Mining Expo

05 - 07 Apr 2021, Oman Convention & Exhibition Centre

The Oman Mining Expo aims to provide a venue for the industry as well as regulators to discuss various issues and challenges as well as to explore emerging opportunities and latest developments in Oman's mining and minerals sector. The event features the latest updates and report on Mineral Development Oman, an overview of the Sultanate Mining & Mineral Sectors, latest updates and report on the Mineral Development in Oman, and much more.





Thank you for your
attention

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