

# **Gold Exploration and Mining in India: Current Status and the Prospect**

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# GOLD MINING HISTORY

- Ancient Mining Dates back to 2000 years.
- Mining in the early part of 16<sup>th</sup> Century (During Vijayanagar Kingdom).
- Modern gold mining commenced by the end of 19<sup>th</sup> Century.

**THE HUTTI GOLD MINES COMPANY LIMITED**  
(A Government of Karnataka undertaking)



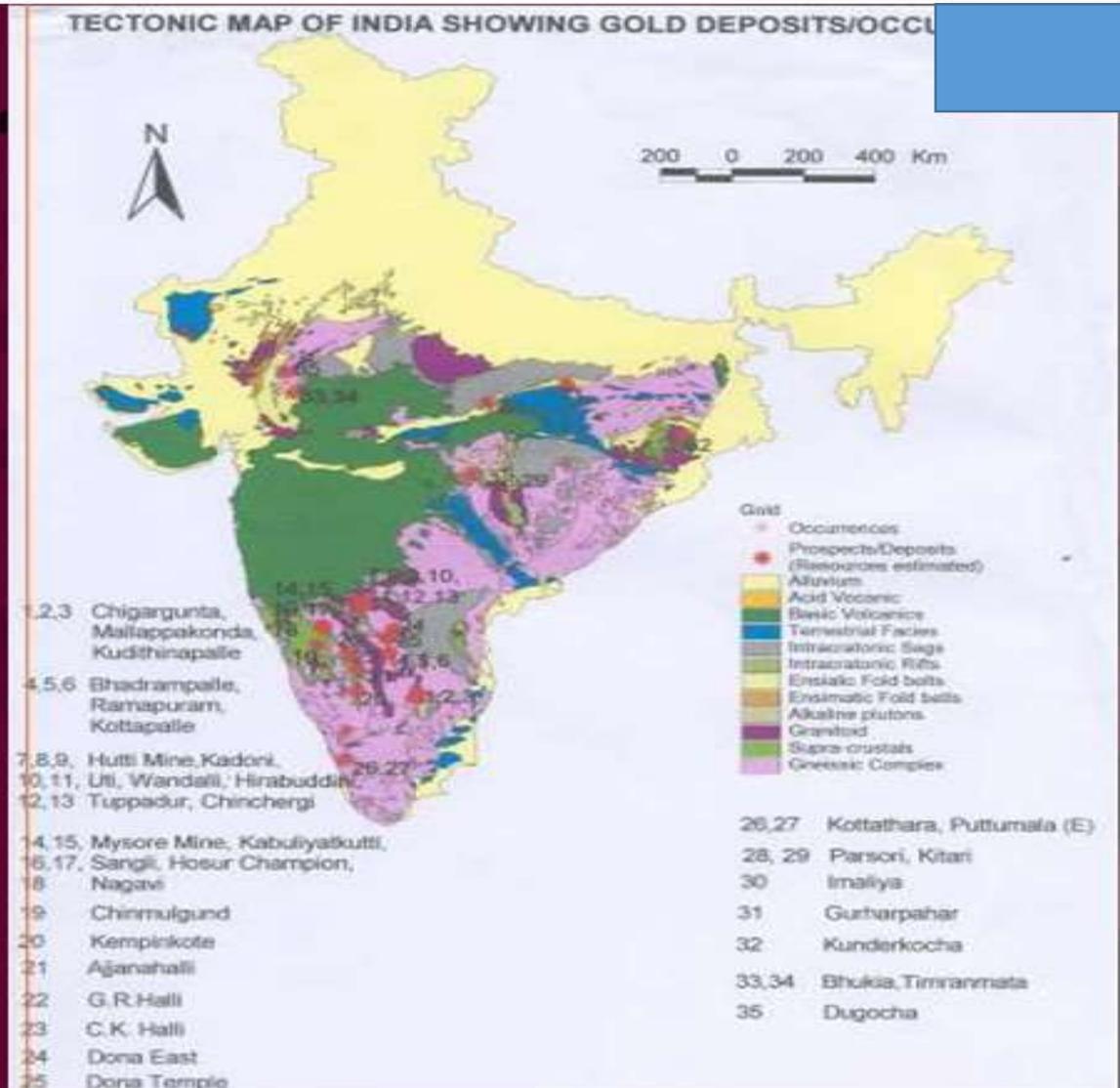
**Worth, at a glance**

- 100% Government owned
- 100% Export Oriented
- 100% Foreign Exchange earning
- 100% Foreign Exchange repatriation
- 100% Foreign Exchange retention
- 100% Foreign Exchange utilization
- 100% Foreign Exchange conversion
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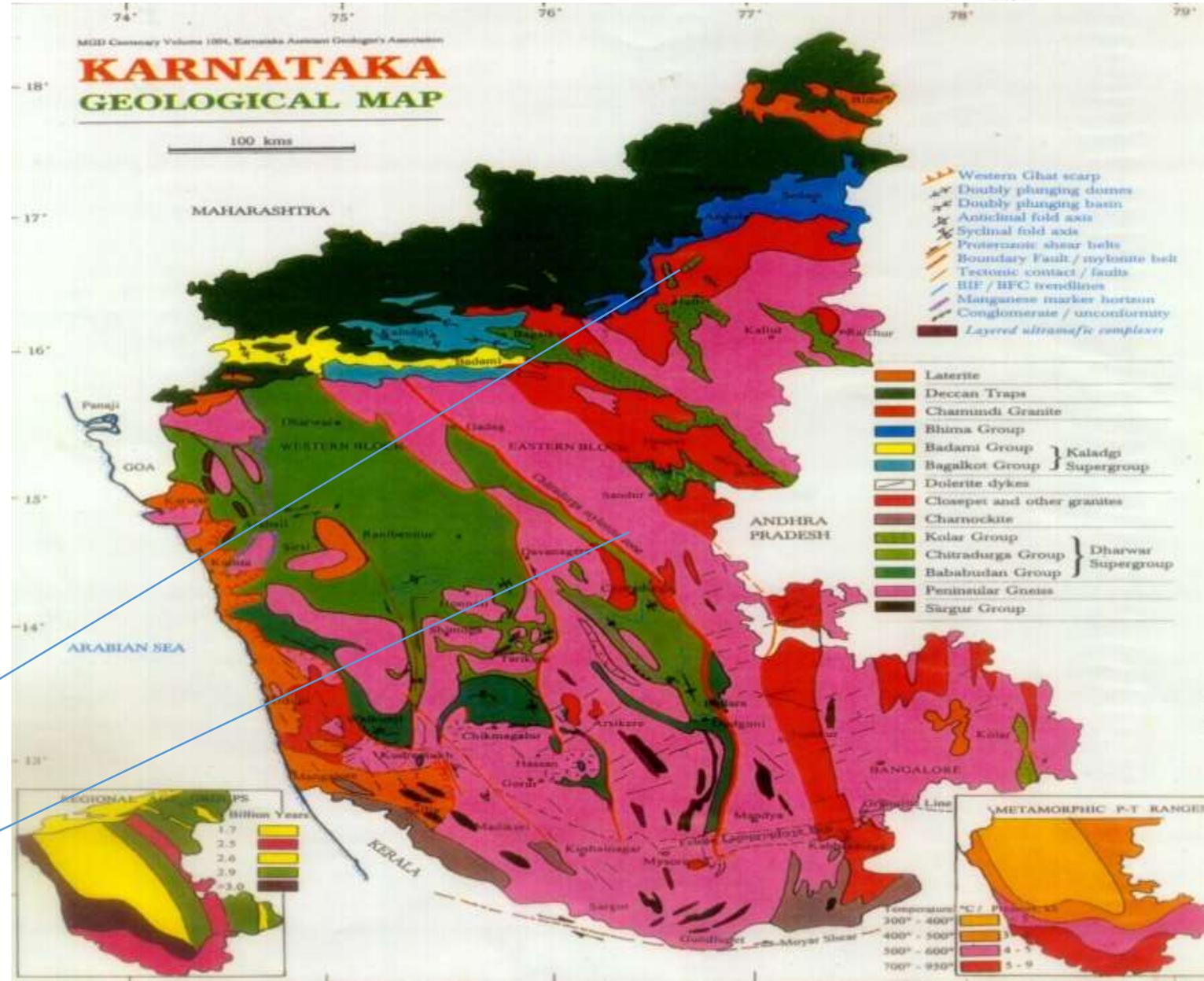
**Geology: Illuminates the Past, Sustains the Present and Promotes the Future**  
Dr. P.S.



Andhra Pradesh	= Anantapur, Chittur, Kurnool
Bihar	= Kamui
Chattisgarh	
Jharkhand	= East Singhbhum
Karnataka	= Chitradurga, Dharwar, Gadag, Gulbarga, Hassan, Kolar, Raichur & Tumkur. Haveri,
Kerala	= Malappuram, Palakkad
Madhya Pradesh	= Sidhi, Jabalpur
Maharashtra	= Nagpur, Bhandara
Rajasthan	= Banswara, Sirohi, Udaipur, Dausa.
West Bengal	= Purulia



- ❖ Geological map of Karnataka showing the distribution of Precambrian Greenstone belts in which various gold deposits are located.
- ❖ Hutti Maski Belt is one such most promising and the position of the Hutti Belt in relation to the other Precambrian Greenstone Belts of Karnataka.
- ❖ Particularly Eastern green stone belts namely Hutti, Ramgiri, Kolar are important as the major working gold mines fall in these belts.



HGML

CGU

- ❖ Gold mineralization took place in all geological ages from late Archean to the Recent , although its intensity peaked in the late Archean-Proterozoic and Phanerozoic ( mainly Mesozoic and younger ) periods.

## Geological Environment.

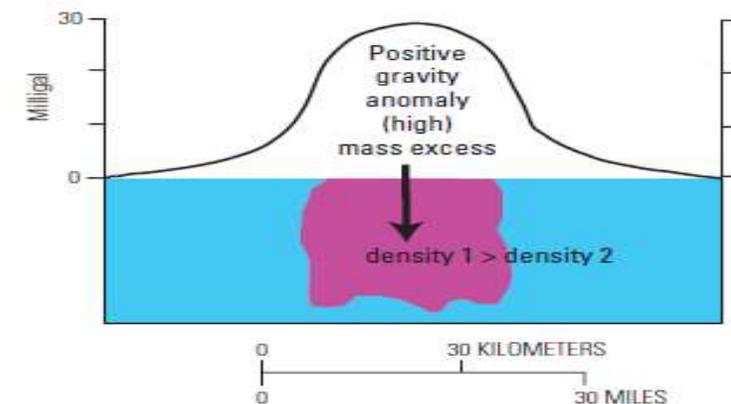
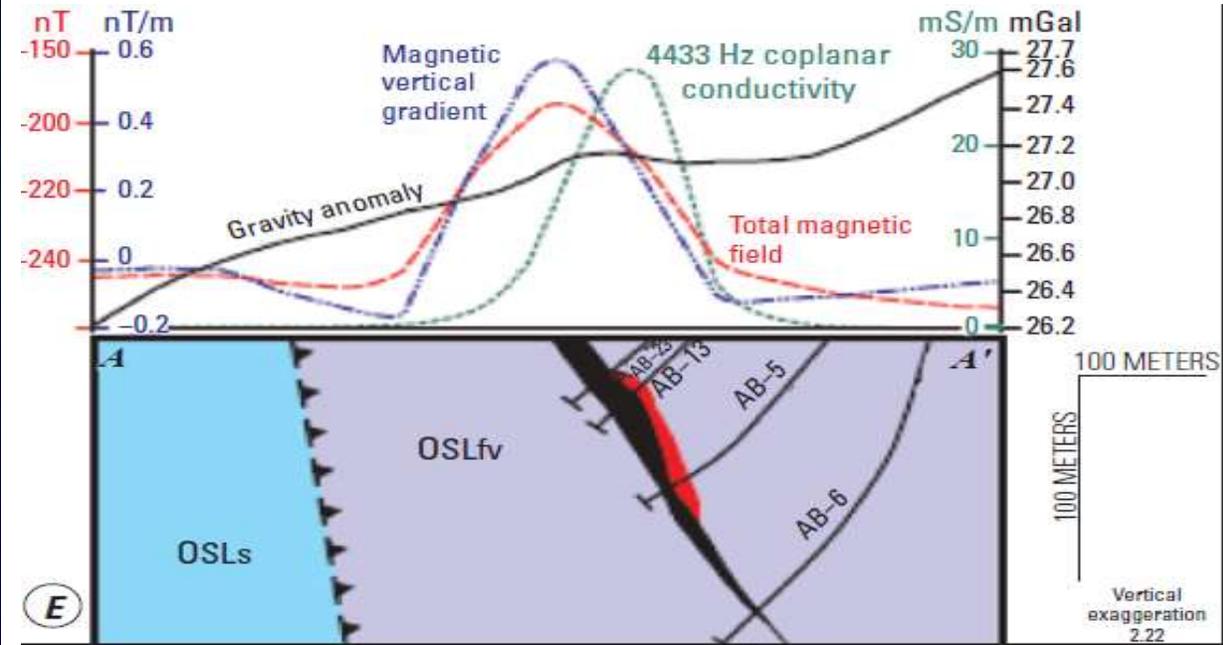
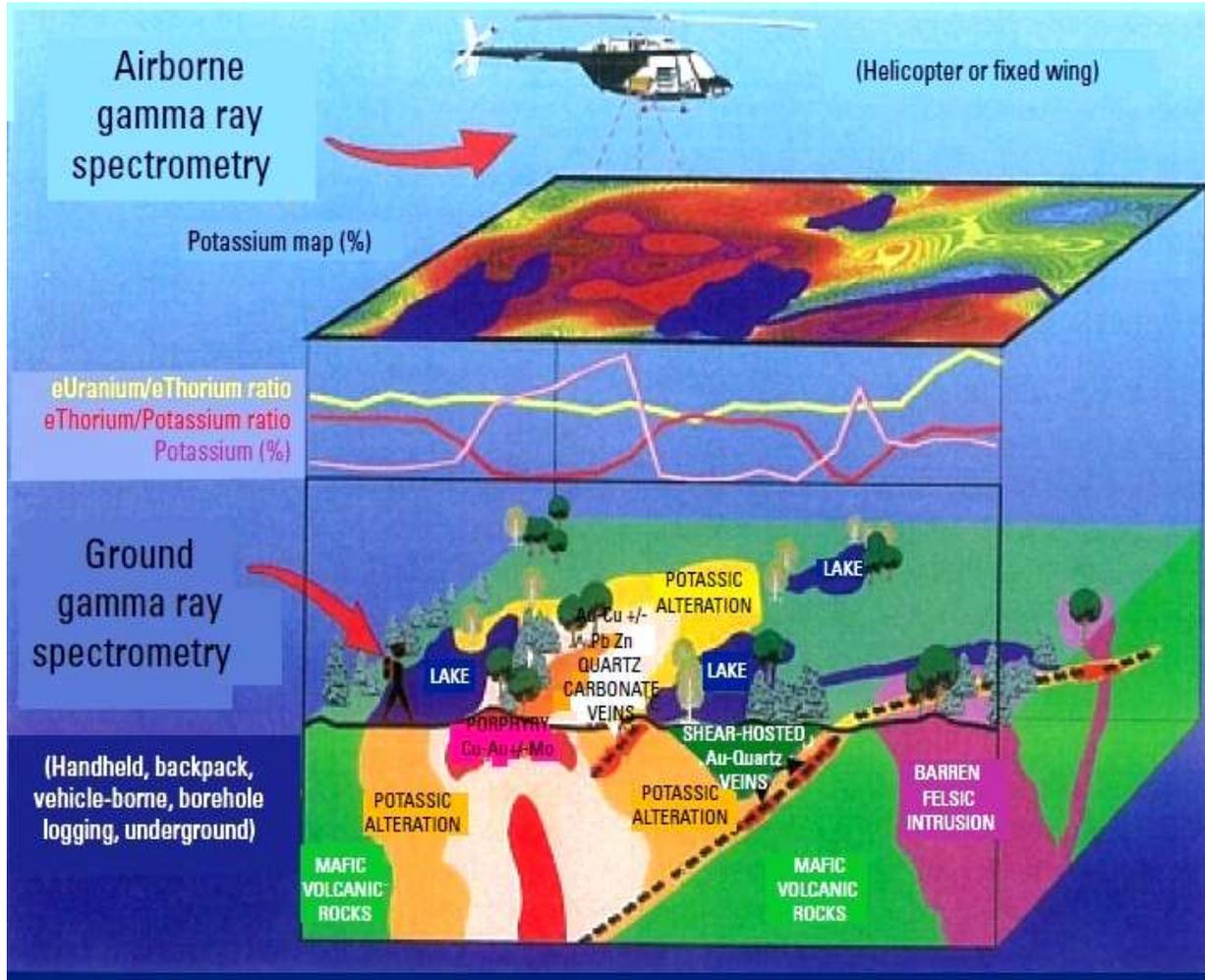
- Gold mineralization in quartz- Carbonate vein : Lode Gold
- Gold mineralization in Granulites terrains.
- Gold mineralization in Banded Iron Formation.
- Gold mineralization associated with volcanogenic polymetallic Sulphides.
- Gold mineralization in quartz- pebble Conglomerates
- Gold mineralization in Greywacke
- Gold mineralization in laterites, placer & alluvial etc.

## WHAT IS EXPLORATION ?

It is a scientific knowledge driven process of searching mineral deposits involving high risk capital with the eventual aim of exploiting the deposit profitably.

**EXPLORATION IS HIGH RISK: 1 of 100 becomes a mine**







## REVIVAL OF BHARAT GOLD MINES (BGML).

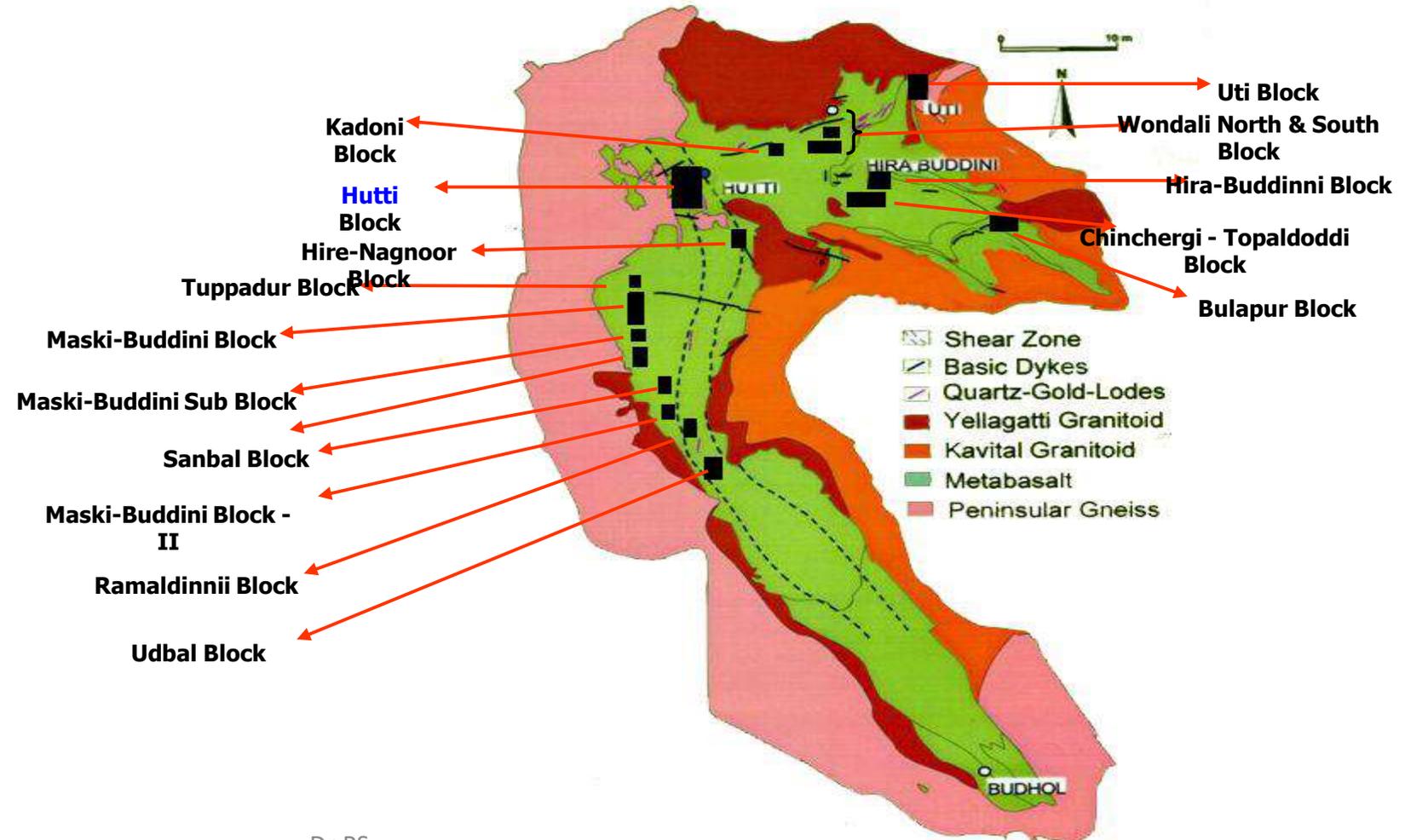
- BGML became a public sector undertaking in 1972. Due to continuous losses Govt. took a decision to close down the undertaking (29.01.2001).
- Gold bearing quartz veins (lodes) distributed in 8 km long and 1.5 km wide area, gold has been recovered upto a depth of 3.230 km. Gold occurrence continues further below in Champion lode.
- All drives/ tunnels put together it will be 1647 km long, cuts and winzes will be 200 km long.
- 55 Shafts on surface and 26 shafts underground were there during peak time of mining.
- 35,000 employees worked throughout the day in 3 shifts during peak time of mining.

At present BGML is a company under liquidation w.e.f. 01.03.2001 operating with minimum staff. The Company, located in Kolar district of Karnataka has assets such as land, machinery, equipment etc. A decision has been taken by Govt. of float an open global tender for the sale of the assets of BGML.

## **TAILINGS AT KGF.**

Mining and Milling operations for gold have contributed to over 30 million tones of tailing dumped in the KGF region. Most of the dumps contain tailings of treated free milling ores and Kennedy's dump consists of tailings of both refractory and free milling operations.

## HUTTI-MASKI GREENSTONE BELT

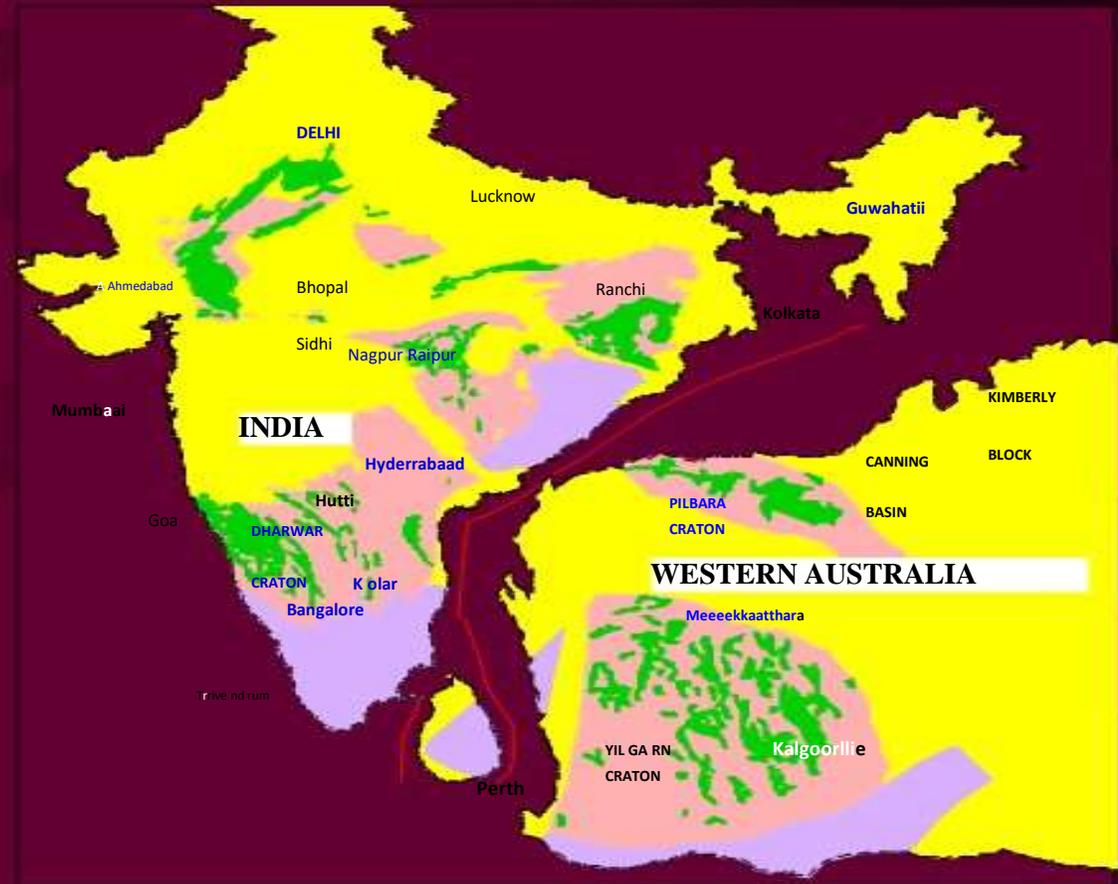




# Mineral Potential of the Indian Terrain

Geologically, the Indian terrain is largely comprised of precambrian rocks.

Similar rocks are known to contain large quantities of gold/base metals in parts of Western Australia, Canada, Africa, South America & China.



- **LOOKING AHEAD:**

- ✓ The total resources of gold metal in the country were estimated at 585 tonnes.
- ✓ Available literature of already carried out exploration in various prospects of Karnataka and the voluminous geo data of operating world class Hutti Gold Mines suggest that, considerable mineral potential still exists in Karnataka & other states.

- ✓ The exploration strategies for gold in India need to be worked out in regional, district and ore deposit scales.
- ✓ A thorough understanding of local lithological and structural controls of known auriferous lodes, pitch of the ore shoots and their depth persistence, variation of tenor, with depth, as well as associated elements and their concentrations vis-à-vis depth are essential while arriving at proper exploration strategy.
- ✓ The employment of exploration techniques viz. detailed geological mapping, geochemical & geophysical survey, trenching, diamond drilling, exploratory mining etc. vary for prospect to prospect, as it solely depends on the nature.

Exploration and Mining industry is suffering from woeful shortage of skilled man power, only skilled work force can increase productivity, health and safety in work place.

Aspects which require further study relate to

- (1) Structural control,
- (2) Nature and composition of gold-bearing fluids,
- (3) Evolutionary stage of greenstone belts hosting lode gold,
- (4) Wall-rock alteration and P-T environment of ore deposition and
- (5) Age of mineralisation. Geochronological data on the age of mineralisation of lode gold at Kolar and Hutti is lacking. Whether large gold deposits are products of single or multiple geological events has to be established.

## Foreign Investment in Gold Mining



FDI has not only been a critical element for economic growth but has also been a vital source of non – debt financial resource for the economic development of India. Generally, the foreign companies invest in India to get advantages of lower wages, tax exemptions, etc. It also helps them is technical know-how and in creation of employment opportunities.

The favorable FDI policy and competitive business environment of India has ensured of foreign capital flowing into the country. In the recent past, there are many Government initiatives taken on relaxation of FDI norms.

As per Department for Promotion of Industry and Internal Trade (DPIIT), FDI equity inflows in India was noted to be 44.37 billion dollars as in 2018-19.

As per the Ministry of Commerce and Industry, Department of Industrial Policy & Promotion, Govt. of India, the Consolidated FDI Policy Circular of 2017 defines the FDI for gold as below:

Sector	% of Equity / FDI Cap	Entry Route
Mining and Exploration of gold	100 %	Automatic

The Competent authority for grant of approval for foreign investment for mining sector rests with the Ministry of Mines.

### **Need of FDI in India for Gold Mining**

- India is a reservoir of a number of minerals and has the right geological environment. Minerals being a valuable resource, the mineral extraction through exploration and prospecting is needed and for this scientific methods of mining are required to be adopted. There needs to be zero waste of mining.
- To achieve the objectives of prospecting and optimal mining, huge foreign investments are required alongwith the latest technologies.
- Till recent times, only mining projects that had a substantial component of mining machinery, equipments were being financed. There is a need for steps to be taken to facilitate the financing of development of mine and exploration stage of mining. As prospecting is a high risk venture, there is a possibility of risk funds. Early stages of exploration and mining requires segmented exchanges. Hence induction of foreign technology and foreign participation in exploration and mining are to be pursued. Foreign investments in joint ventures for exploration and mining are hence required.

## **Benefits:**

- With more foreign investments coming in for mining, exploration of gold in the country will rise.
- Almost 14 companies from top gold mining countries, have shown their keen interest in bringing technical expertise needed for identifying the potential of a mining block in India.
- If more of FDI comes in the country, the entrepreneurs who have made huge risk capital will get mining lease automatically. This will help them shield their capital as mineral exploration needs huge money.
- Moreover, India has a vast area of minerals, spread over 18.5 lac sq. km. But due to lack of technology and capital, mining activities and growth had not received any impetus. The rise in FI will enable the global entrepreneurs to flock the country with technology and capital.
- As stated above, India is a land, rich in production of minerals. It has huge tonnes of gold reserves, but enable to produce as per the demand.
- A rise in FI will reduce the overall time taken for new mining leases to be granted. Currently, this is a tedious process and takes around six months to a year for granting a mining lease. These can be shortened through increase in FI.
- FI would also attract foreign and domestic firms to invest in the exploration and gold mining and prospective firms / companies shall obtain a mining license.

## Effective Tax Rates And Taxation in Gold Mining Across Countries

- Gold mining is a long-lived and high risk bearing business activity. It involves huge capital investment for development and expedition. The time involved in the pre-production stage is quite long whereby there is no revenue generated. The profits are subject to the commodity and exchange rates. Hence the risk too is very high. As a result, Government often prefer to offer incentives in the tax to boost investment in mining business.

## Effective Tax Rates in India

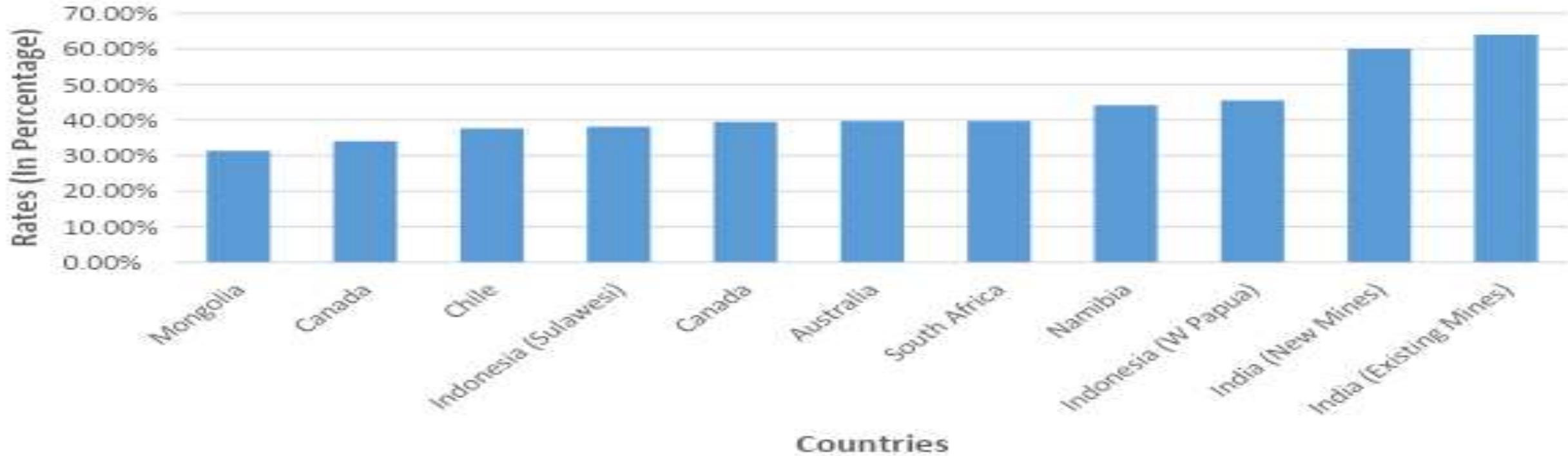


Effective Tax Rate is the average percentage that companies and individuals pay in taxes on their taxable income. It is typically calculated by dividing total taxes paid by the total taxable income.

ETR does not cover the following:

- **(i)** Auction price (base price + premium)
- **(ii)** Purchase of land for mining
- **(iii)** GST of 18% of royalty made effective w.e.f. 01.07.2017.
- **(iv)** 10% tax levied by Supreme Court in Goa and Karnataka and FDT levied by Karnataka aswell as highest rate of royalty on iron ore in Orissa.
- **(v)** Net Present Value (NPV) = Rs 4.38 lakhs to Rs 10.43 lakhs per hectare depending on the density of forests
- **(vi)** Compensatory afforestation charges which differs from State to State
- **(vii)** Upfront payment at the time of grant of mining lease = @0.50% of value of estimated resources.
- **(viii)** Performance security = @0.50% of the value of resources

## Comparison of Effective Tax Rates across gold mining countries



- The ETR on mining comprises of royalties, contribution to District Mineral Fund (DMF) and National Mineral Exploration Trust besides the GST rates.
- ETR on mining highest in India – ranges between 60-64%
- Mining sector wishes to have a 'One Tax Regime', seeking a 40% cap. Having a single tax rate would help in reducing the net ETR.
- State/region wise taxes should be abolished
- Tax holidays can act as an incentive in the initial years of exploration & production
- Rationalisation of royalty for mines can also serve as a catalyst

## Reserve Position:

		India	Karnataka	HGML	%
Gold Ore (Million tonnes)	Primary	503.84	103.85	16.30	16% of Karnataka
	Secondary	26.12	---	---	
Metal (tonnes)	Primary	654.74	310.62	71.83	23% of Karnataka
	Secondary	5.86	---	---	

- ✓ During 1894, the production of gold in Karnataka was 5.3 tonnes, when the sale price of gold was Rs. 2.50 per gram. The production was stepped up and reached a peak production of 14.7 tonnes in the year 1906.
- ✓ The present production is around 2.00 to 2.50 tonnes per year. The best opportune time for significantly stepping up the exploration and production is now for the fact that gold is enjoying an all time market.
- ✓ About 585 tonnes of gold metal established by Govt and Pvt agencies should be upgraded by substantial drilling, exploratory mining and feasibility studies to reach a mineable reserves.
- ✓ The big process of exploration, discovering, developing and establishing new gold mines in the country should receive serious consideration at all level of decision making.

**Gold is where it should be,  
It is for us to find it out.**



**Thank you**