

Mineral Policy of Government of Andhra Pradesh

I. INTRODUCTION

The minerals and metals have formed an integral part of man's material needs. Even the various civilizations have been named after minerals and metals like Stone age, Copper age, Bronze age, Iron age and now the Atomic age or Uranium and Plutonium age. Koutilya in his Arthashastra has stated that "the wealth of the State is its source in the mining and metallurgical industry; the power of the state comes out of these resources".

Minerals are a fundamental component of nation's material and economic base. However, most people are not aware of this role in the country's economy and the contribution made by minerals in the growth of nation's wealth. This lack of awareness in the past had led to low priority to mineral development and related infrastructural needs in respect of the plan allocation in our country. It is fortunate that lately the importance of minerals is gradually coming to limelight. The Government of Andhra Pradesh under VISION-2020 document has given a thrust for mining and development of Mineral Based Industries.

II. GENERAL

The State of Andhra Pradesh spreads over an extent of 2.77 lakh square kilometers in the south east of the Indian sub-continent and supports a population of more than 70 million people. Area wise and population wise it is the fifth largest state in the country.

The state is endowed with a variety of natural wealth, the land being conducive for the growth of several food and cash crops, the important among which are the paddy, sugar cane, groundnut, cotton, tobacco and chillies. It has large tracts of useful forests covering 22% of the area and endowed with a variety of flora and fauna. It has a long coast-line of 960 kms, spreading from Ichapuram taluq in Srikakulam district in the north to Sulurpet in Nellore district in the south.

Compared to many other states in India, Andhra Pradesh has a large number of perennial rivers which rightly earned it the popular name of a 'river state'. The Godavari, the longest and widest river of south India flows for 770 kms and is fed by several tributaries in the state, such as Penganga, Pranhita, Indravati, Tal and

Sabari. The Krishna river flows through the central portion of the state for about 620 kms and is fed by the tributaries Thngabhadra, Dindi and Musi. Both the Godavari and the Krishna have developed large deltas of very fertile land rich for paddy cultivation which earned the name of 'Paddy Granary of India' to the state.

The next longest river is the Penna flowing through the southern parts of the state with its tributaries Chitravati, Papagani, Cheyyeru and Sigileru. Other rivers worth mentioning are the Nagavali and Vamsadhara in the north and the Gundlakamma and Swarnamukhi in the south.

The annual rainfall varying between 75 cm to 150 cm in different parts, derived through the south-west and north-east monsoons, feeds not only the rivers and streams, but the innumerable natural and artificial tanks and ponds and helps replenishment of ground water which is harnessed to a sizeable extent to supplement surface water impounded and diverted into canals at various vantage points. The state has thus reservoirs covering 1,11,375 hectares, ponds and tanks of 10,125 hectares and river system of 4480 km in overall length.

Administratively, the state is divided into 23 districts. Physiographic ally, the state can be divided into five regions:

1. The coastal plains,
2. The Eastern ghats,
3. The south central uplands,
4. The interior rugged plains and
5. The north-western plateau.

Minerals directly or indirectly contribute to industrialization, they form an important infrastructure for any development of the State and Country. Management of available mineral resources is vital for achieving the desired goals cherished by the society and Government.

In order to keep pace with the rapid consumption of minerals, the conservation has become an important factor. Conservation of non-renewable resources means "Wise use and efficient management"; "full extraction and full utilization"; no waste; "no unnecessary hoarding" achieved within the social and environmental framework of the community. These aspects can be summarized shortly as:

- (a) Dig the minimum required.
- (b) Make full and proper use of what is dug out.
- (c) Waste the least.

III. INFRASTRUCTURE

Andhra Pradesh has vital infrastructural facilities like Power, Railways, Ports, Airports, Communications and Information Technology.

POWER

Andhra Pradesh has an installed capacity of 7935 MW power plants and has already started constructing projects under Public Sector as well as under Private Sector to augment power supply.

ROADS

The State has a total road network of 194523 km out of which state roads constitute 7952 km, major district roads constitute 34168 km. The road density in the state is 0.70 km per one Sq.km and 293 km per one lakh population against the all India average of 1.00 km per one Sq.km and 389 km per lakh population.

RAILWAYS

The State has a total length of 4598 km comprising 3875 km of Broad gauge, 686 km of Metre gauge and 37 km of Narrow gauge. They are well connected with all the major cities, towns and district headquarters.

PORTS

Andhra Pradesh has a coastline of 974 km running from Ichapuram in the north to Sulerpet in south. The State has one major port at Visakapatnam, 2 intermediate ports at Kakinada and Machilipatnam and 10 minor ports at Bhavanapadu, Kalingapatnam, Bheemunipatnam, Gangavaram, Muthyalammalem, Rawa, Narsapur, Nizampatnam, Vadarevu, Krishnampatnam. They have very good potential for handling both minor and major traffic.

AIRPORTS

Andhra Pradesh has one International Airport at Hyderabad and another one is coming up at Shamshabad. There are 4 domestic airports existing at Tirupati, Vijayawada, Puttaparti and Visakapatnam. The State has also number of small airstrips with inadequate infrastructure and landing grounds in 17 locations spread all over the state.

COMMUNICATION

The state has a dedicated telephone communications connected to all the remote areas, towns and cities. The dedicated communication is also being developed both under public and private sectors under the new regulations

INFRASTRUCTURE

Andhra Pradesh lays considerable stress on Information Technology and created a world class Information Technology infrastructural facility around Hi-tech city being notified as CYBERABAD. The Government is also dispersing the Information Technology to all the remote parts of the State by promoting Information Technology parks at Vizag, Vijayawada, Tirupati and Warangal.

IV. MINERAL RESOURCES

The State geologically is unique and consisting of Igneous, Volcanic, Metamorphic & Sedimentary formations, range from the most ancient to the recent with wide and diverse varieties of litho units. The State has host of industrial, non-industrial minerals and rocks. Andhra Pradesh is the second largest state in terms of mineral resources in the country. The state is endowed with abundant mineral wealth with large deposits of industrial, energy, metallic, precious minerals. 48 minerals were identified with vast explored reserves of Coal, Limestone, Bauxite, Barites, Beach Sands, Gold, Diamond, Mica, Clays, Dolomite, Quartz, Manganese, Basemetals, Thngsten, Semiprecious Stones, Feldspar, Silica sand, Low-grade Iron ore, Oil & Natural Gas and export potential minerals.

It accounts for considerable reserves of important minerals in the country, viz. Mica (86%), Barytes(96%), Calcite, Limestone (34%), Vermiculite, Gamet (13%), Feldspar, Fuller's earth (11%), Dolomite, Asbestos (11 %), Fire clay,

Ball clay, (30%), Soap stone, Silica sand, Graphite, Quartz, Quartzite, Diamond (16%), Gold, Thngsten, Corundum, Pyrophyllite, Kyanite, Granite, Marble, Ochre, Apatite, Chromite, Shale, Slate (30%), Limeshell, Limekankar, Green quartz, Precious & Semi Precious stones etc.

MAJOR MINERALS

APATITE

Apatite deposit (P205 > 35%) in the entire Southern India occurs as lenticular bodies I veins in association with Vermiculite and magnetite in the Pegamatities traversing Khondalites near Kasipatnam at Seetharamapuram- Visakhapatnam district, which is being exploited under joint venture by Ws Andhra Pradesh Mineral Development Corporation

ASBESTOS

The best crysotile variety of Asbestos is found near Pulivendla and Brahmanapalli in Cuddapah district. There are number of Asbestos deposits in Cuddapah, Kurnool and Mahabubnagar districts. There is good scope for Asbestos based industries to manufacture break linings, clutch facings, automobile gaskets, asbestos fabrics and ropes.

BARYTES

Huge reserves of Barytes are found in Cuddapah, Prakasam and Nellore districts. World's largest single deposit with an estimated reserve of 70 million tonnes Grey Barytes occurs in Mangampet, Cuddapah district. In addition to these, a number of snow white and white vein type Barytes occur in Khammam, Prakasam, Ananthapur and Kurnool districts, containing BaSo4 77 to 92% and specific gravity ranges from 3.6 to 4.21. Mangampet Barytes with grade 92% BaSo4 and an average specific gravity of 4.21 is used in oil & gas well drilling. The other grades are catering the needs of Chemical and Paint industries. The Mangampet low grade Barytes is amenable for beneficiation to high grade ore to match specific requirement and recovery of by-products.

Andhra Pradesh is the leading producer and contributes about 90% of the total country's production. Andhra Pradesh Mineral Development Corporation

exploiting the Mangampet deposit under public sector, produces about 5 to 6 lakh tonnes per annum and intends to increase the production level to 1 million tonnes in the coming years. Drilling fluids dominate consumption of world barytes to the extent of 90% of the total production. Most of the production from the state is being exported to USA, Middle East including Saudi Arabia, Oman and UAE, Japan and South East Asia and Eastern Europe after catering to the requirement of ONGC. The Barytes is not reclaimed or recycled for use in other wells due to low cost. The demand for usage of the Barytes in the oil well drilling is increasing with exploration activity.

APMDC is the largest producer of Barytes and intends to increase the production level to one million tonnes through Joint Sector participation for integrated project covering maximization of production, beneficiation of low grade Barytes, setting up of Barytes based industries to create value addition and maximization of exports.

BEACH SANDS / PLACER DEPOSITS

Potential Monazite beach placer deposits are found all along the coastal stretch right from Srikakulam district on north to Prakasam district in south and also along the Godavari, Krishna, Nagavali, and Vamsadara river channels & confluence, which contains Illmenite, Monazite, Zircon, Rutile, Gamet and Sillimanite, out of which Zircon & Monazite are atomic minerals and classified. Illmenite & Rutile are Titanium bearing minerals. The concentrations of these minerals are variable ranging from 15 to 20% in the sands, which are economically viable for commercial exploitation. The Geological Survey of India and Atomic Mineral Division have carried out investigations and explorations led to delineation of 16 potential Heavy Mineral Beach Sand Deposits over a cumulative length of 320 km with an average width of ranging between 128 m and 1150 m from Ramayyapatnam (Nellore dist) in the south to Donkuru (Srikakulam dist) in North with heavies ranging from 20 to 32%.

Generally, beach sands are also called heavy minerals, even 4% of heavy minerals are being mined and separated through Gravity process and different mineral components are being used for different purposes, Monazite & Zircon in atomic energy, Rutile & Illmenite for extraction of Titanium, manufacture of super alloys and also as pigments and abrasive, Sillimanite in refractory and Gamet in abrasive industry.

The beach sands form the main source of Garnet, Sillimanite, Titanium and manufacture of vast number of down stream products useful in various industries. The vast potential of Monazite sand deposits can sustain large scale industry over longer period for manufacture of Titanium- Di-Oxide and down stream products.

BAUXITE

Andhra Pradesh is 2nd richest in Bauxite deposits in the country, huge reserves of 750 million tons of metal grade Bauxite have been proved in forest and tribal tracts of Visakhapatnam and East Godavari districts by detailed explorations. MECON has prepared feasibility report for establishing alumina plant near the vicinity of Visakhapatnam port. APMDC has already applied for mining leases in 24 areas and 3 leases are under close finalisation by due completion of environmental impact studies, mine plan and under final stages of process for forest clearance. Opportunity exists for establishment of an integrated project - Mining, Manufacturing Alumina / Aluminium and Exports. All bauxite deposits are located in proximity to the fast growing Visakhapatnam port.

COAL

Andhra Pradesh is the sole producer of Coal in the entire South India. Coal occurs in Gondwana formations of Godavari valley and found over larger tracts of Adilabad, Karimnagar, Khammam and Warangal districts. These vast spreads of Coal formations are partially explored by different Geological agencies and identified around 10,500 million tonnes of measured reserves and possible reserves of 30,000 million tonnes. There are many more areas to be explored to prove the reserves in the Godavari Coal belt. Mis Singareni Collieries Company Limited is solely operating the mines under Public sector in the state, producing around 30 million tonnes per annum and selectively catering to the needs of various industries in the whole of South India.

The Government of India has liberalized the Coal Policy allowing private sector to explore and exploit the coal resources. Mis Singareni Collieries Company Limited has identified 6 blocks with 464 million tonnes of coal for Privatization. However majority of the coal falls under the C and D Categories with an average ash content ranging from 24 to 34%, which may not be useful in steel and other allied industries. The coal washery would decrease the ash content by 7 to 8 % and bring to the level of around 18 to 26%, which may render its usage in steel

industries. Andhra Pradesh with vast Coal Potential and infrastructure have potential for Private sector participation in captive Coal mining to meet the demand and supply gap and also to setup coal washery plants in the state.

COPPER, LEAD & ZINC

Occurrences of Copper, Lead & Zinc are found at number of places in Cuddapah, Guntur, Khammam, Kurnool, Nellore and Prakasam districts. The established reserves are about 9 Million Tonnes of Copper, Lead & Zinc with 1.35 to 1.60 % Copper, 3 to 9% Lead and 4 to 5% Zinc. The Lead deposits of Guntur District are being exploited by Hindustan Zinc Ltd., a public sector organisation, but there is potential to exploit other deposits with improved technology and investments.

CALCITE

Semi-transparent & Good grade Calcite with less than 2% of SiO₂ occur in Ananthapur, Cuddapah, Khammam & Visakhapatnam districts. They are being used in metallurgy, welding flux, as filler in rubber and Paint Industry. There is a vast scope to develop and export the calcite from the state.

CERAMICS

Andhra Pradesh has plenty of Minerals required for Ceramic industry and is the largest source for various Clays, Feldspar, Quartz, Silica Sand, Pyrophyllite, Nepheline Syenite & Rare Earths (Titanites/Zirconite). Conventional Ceramic Industry in Andhra Pradesh provides a strong base for development of Advance Ceramics with sophisticated processing and technology transfer. The State forms a base for development of Advanced ceramics like Electro and Mechano Ceramics.

CLAYS

Workable deposits of Fire Clay, Ball Clay, China Clay and Ordinary Clay occur in Adilabad, Ananthapur, Cuddapah, East and West Godavari, Mahabubnagar, Kurnool, Nalgonda, Guntur, Nellore, Prakasam, Srikakulam, Visakhapatnam and Vizianagaram Districts. The total estimated reserves of Clays are around 21 million tonnes.

The Fire Clays occurring in Adilabad and East Godavari districts are being used in sanitary ware and stone ware industries. China Clay and Ball Clay occurring in Ananthapur, Kurnool, Cuddapah, Nellore, Nalgonda, West Godavari and Guntur districts are being used in different Ceramic, Refractory & Filler Industries. Ordinary clay is being used in manufacture of Sewerage Pipes & Mangalore Tiles.

Clays find usage in many industries like Ceramic, Refractory, Paper, Textiles, Electrical, Cement, Petroleum, Foundries etc.

DOLOMITE

Dolomite is found in Khammam, Kurnool, Ananthapur, Warangal and Cuddapah districts. Visakhapatnam Steel Plant and Southern Magnesium are exploiting metal and SMS grade Dolomite of Khammam and Warangal districts. Dolomites from other districts are presently been used as filler in detergents, and other industries. There is a scope to develop new mines and establishment of Dolomite based industries in the State.

DIAMONDS

Andhra Pradesh is known as Ratnalaseema (Le. Land of Diamonds) for centuries for the best diamond occurrences, some of world known diamonds like Kohinoor, Regent etc., are from the state. Diamond bearing areas are spread over 50,000 Sq. km under different environs in Ananthapur, Kurnool, Cuddapah, Krishna, Guntur, prakasam, Chittoor, Nalgonda, Khammam, Mahabubnagar and Warangal districts of the State. Integrated Geological surveys carried out under National Diamond Project identified Diamondiferrous Kimberlite / Lamproite Pipes, Conglomerates and Gravel.

So far 53 Kimberlite / Lamproite pipes were identified and further explorations are continued. Average incidence is about 3 to 4 carats /100 tons of source material. The Govt. has granted Reconnaissance Permits to the national and international companies for carrying out Aerial surveys for diamonds in the state

FULLER'S EARTH

Pocket type deposits of Fuller's Earth occur at number of places around Vikarabad- Ranga Reddy district, which is being used in Oil well drilling, as a

bleaching Earth in the edible Oil refining and exported to Middle east countries.

FELDSPAR / NEPHILENE SYENITES

Potash & Sodic Feldspar occur at number of places as pegmatites in Ranga Reddy, Mahabubnagar, Khammam, Nalgonda, Nellore, Cuddapah, Ananthapur & West Godavari districts. Nephilene Syenites occurs in Khammam and Prakasam districts. The percentage of $K_2O + Na_2O$ will be around 12 to 15% in most of the areas. They are being used in Ceramics & Refractories and also a part of it being exported. There is a vast scope to develop value-added products within the state.

GOLD

Andhra Pradesh is also known for Gold mining during various periods of history, specially during the regime of Vijaynagaram Empire. Number of Gold bearing green stone schist belts occur in Chittoor, Ananthapur, Kurnool, Guntur, Prakasam, Cuddapah, Khammam, Mahabubnagar and Nellore districts of the State, so far 28 such belts were identified extending over lengths of 16 to 185 km with an estimated reserve of 6.9 million tonnes of Gold ore and average assay of 3 to 5 grams of Gold per tonne of ore. Most of the deposits are associated with Scheelite. The vast terrain of potential Gold bearing fields are yet to be scanned thoroughly due to various reasons of Technology. The Govt. granted Reconnaissance Permits to the national and international companies for carrying out Aerial surveys for gold in the state.

GRAPHITE

Low grade Graphite with less than 40% Fixed carbon is found in Khondalite suite of rocks in Khammam, West Godavari, East Godavari, Visakhapatnam, Vijayanagaram & Srikakulam districts of the state. There is scope to develop new mines and establishment of Graphite based industries in the State.

GARNET

Garnets associated with, Mica, Kyanite, Quartzite Schists, Gneisses and Pegmatites are found in the fields and Nalas in Khammam, Krishna, Visakhapatnam Vizianagaram, Srikakulam, East. Godavari and Nellore districts. The surface pickings and mining is common in and around villages of Gubbagurthi, Laxmipuram, in Khammam district and Singarayapalem,

Saidapuram and Utkuru in Nellore district. They are collected for cutting, faceting and locally used as abrasive

GERMS & JEWELLERY

Andhra Pradesh was the richest bazaar for Gem, Jewellery and lapidary in the annals of past history due to close vicinity of vast resources of raw materials like Gold, Diamond, Semi-Precious Stones and more particularly the skilled craftsmen. The beauty of Nizam Jewellery is still an envy of the world. Most of the traders from Jaipur, Surat and Combay source their material and designs from Andhra Pradesh. Hyderabad is also known as Pearl Centre of the country. Andhra Pradesh offers abundant opportunity with potential resource of Gold, Diamond, Ruby, Aquamarine, Emerald, Cryso-Berly Cat's Eye, Silliminite Cat's Eye, Alex and other Semi-Precious Stones with cheap skilled master craftsmen have an advantage over other states to establish a Gem & Jewellery Park either in Hyderabad or in the exclusive export zone in Visakhapatnam. The development of Gem & Jewellery is a thrust area under New Industrial Policy and package of incentives are being offered for setting up such park facility for value addition and export. Prospective entrepreneurs can avail this opportunity.

IRON ORE

Iron ore occurs in Kurnool, Ananthapur, Chittoor, Khammam, Warangal, Karimnagar, Adilabad and Prakasam districts. The total estimated reserves are around 265 million tonnes of various grades of Iron ore. High grade Hematite Iron ore from Ananthapur and Kurnool is being exploited and catering to the needs of Sponge & Pig Iron Plants in the State.

The low grade Magnetite Iron ore deposits with 22 to 35% Fe are found over a length of 52 km near the Port in Ongole- Prakasam district, which were thoroughly explored and with estimated reserve of 165 million tonnes. Feasibility report was prepared by Mis MECON for establishing a sponge Iron Plant.

KYANITE

Kyanite found associated with Mica schists in Prakasam, Nellore and Khammam districts. They are low grade containing 37 to 65% Al₂O₃ and 34 to 57% SiO₂.

LIME SHELL

Limeshell occurs intermixed with silt in the backwaters of Pulicat lake near Tada, Attakanitippa and Irkam in Nellore district. Some deposits of limeshell are Wada Cheepurpally near Visakhapatnam and also in Srikakulam district. These limeshells yield nearly 100% CaCO_3 and used in chemical industry.

LIME KANKAR

Widespread occurrences of limekankar are found over Calc-granulite/Calcsilicate and quartz-feldspathic rocks in the Eastern Ghats around Chipurpally and Bogapuram in Vizianagaram district and Kaza and Nambur in Guntur district. The limekankar contain about 45 to 53% CaO .

LIMESTONE

Andhra Pradesh contains 44% of limestone reserves of the country (with estimated reserves around 30,400 million tonnes of different grades) produces 15 million tonnes and contributes 15% of the total production of the country. State is one of the largest producer of cement (18-20%) with 18 major and 29 mini cement plants.

Exploitation of Limestone is quite meager, when compared to the vast potential. The State has good potential to start many more cement plants and gives preference for setting up cement and Lime based industries. The State encourages for setting up slag and fly ash based Cement plants near Visakhapatnam Steel Plant and Thermal Plants. The growing construction activity has a vast scope to set up cement plants and ready mix cement concrete units.

MANGANESE

Andhra Pradesh is one of the few States in India, producing Manganese ore. There are number of deposits in Vizianagaram, Srikakulam, Adilabad and Prakasam Districts. The estimated reserves are about 7.5 million tonnes of low grade manganese with 30 to 40% Mn in the state. The Manganese ore can be used for the manufacture of Electrolytic Manganese Dioxide, Manganese

Chloride, and Batteries in addition to exports.

MICA

The state stands 2nd in the Mica deposits and production in the country. The Nellore Mica schist belt is known as the 2nd biggest mica belt in the country extends over a strike length of about 90 km and covering an area of about 1000 Sq.km is found around Gudur, Rapur and Atmakur Mandals of the Nellore district. This mica belt is the repository of Muscovite mica, Quartz, Feldspar and Vermiculite. Other Deposits of Mica are located in Khammam, Krishna, East and West Godavari, Nellore and Visakhapatnam districts. The State contributes substantially to the production of Phlogopite & Muscovite Mica. At present bulk of the Mica production comes from Nellore and Visakhapatnam districts. The book Mica, scrap Mica and Mica Powder are mostly exported due to lack of Mica based industry. There are opportunities for investment in development and establishment of manufacturing units for value added Mica based products.

OIL & NATURAL GAS

Oil & Natural Gas occurs in an area of 20,000 Sq.km on-shore and 21,000 Sq.km off-shore in East and West Godavari and Krishna districts. Production is under way in number of wells and a few industries like Gas Based Power Plant, Fertilizer Plant etc., have already come up. The present availability of Gas from Krishna, Godavari Basins is of the order of 3 to 4 million CU.Mt / day. The recent finds of natural gas have created tremendous scope for development in the Krishna- Godavari Basin.

OCHRE

Red & Yellow Ochre extensively occur at number of places in Kurnool, Ananthapur, Cuddapah, Visakhapatnam & West Godavari districts. They are being used in Paint & Polishing industry.

QUARTZ / QUARTZITE

Granular, Glassy, Semi-glassy and Massive Quartz!Quratzites deposits occur extensively in Mahabubnagar, Ranga Reddy, Nalgonda, Medak, Nizamabad, Khammam, Kurnool, Ananthapur, Chitoor, Nellore, prakasam, Guntur, West Godavari, Visakhapatnam & Vij ayanagaram districts in the State. Quartz finds

usage in Ferro-Alloys, Ceramic and Glass Industries. Presently Quartz is being mined from Ranga Reddy, Mahabubnagar, Medak, Kurnool & Nellore districts and exported from Madras port to various countries.

The SiO₂ ranges from 99.5 to 99.90%, Fe₂O₃ 0.02 to 0.08% with minute Percentages of Al₂O₃. Depending on the quality of the mineral, scope exists for setting up industrial units for the manufacture of Glass, Silicon Carbide, Fibreglass, Silica Gel, Quartz Wool, Ceramic Glass, Silicon Wafers and Refractories. Vast scope exists for exploitation, development & export of the Quartz! Quartzite from the state.

SILICA SAND

Large reserves of good foundry / moulding/Glass Grade Silica sand Occurrences are found along the coastal tracks of Prakasam, Nellore and Guntur districts extending from Chinna Ganjam to Bapatla and Kalahasthi in Chittoor district In addition, there are extensive Quartzites containing silica sand deposits around Orvakal in Kumool district. These Silica Sands are white, well graded with Silica content varying from 85 to 92 % with traces of iron. The Silica Sand from these areas are used as Moulding sand, Sodium Silicate, Ceramics, Refectories, Glass etc., There is a vast scope to exploit and develop the deposits.

STEATITE / TALC / SOAP STONE

Best grade Steatite/talc/Soap Stone occurs at various places in Kumool, Ananthapur, Cuddapah and low grade occurs in Chittoor and Khammam districts. Presently Steatite is being mined and supplied to various Cosmetic, Soap, Ceramic and as a filler in Pesticide and Insecticide industry. Presently, there are no Steatite based Cosmetic and Soap manufacturing industry in the State.

TUNGSTEN

Tungsten ore is occurring over a length of about 1 Km in Tapsikonda and Burugubanda in East and West Godavari districts. Mis NMDC has explored the area in association with BRGM and proved reserve of about 11 million tonnes of ore with 0.03 to 0.05 % of W₂O₃ in association with Graphite. Thngsten is very much useful in super alloys and electronics.

VAMADIUM

Vanadium is an important element in the manufacture of special steel and other alloys, occurrence of Vanadiferous titano- magnetite deposit in Thiruvur, Krishna district contain V2O3 1.2 to 1.4%.

VERMICULITE

Vermiculite is found in association with the Mica in Nellore and Visakhapatnam districts. The production is not commensurate with the potentiality in the areas. Vermiculite is mostly used in acoustic purposes after exfoliation and also exported.

MINERAL MINERALS

GRANITE

Andhra Pradesh is one of the largest producers of exportable granites in the country. 17 out of 23 districts have several occurrences of different varieties of granites. Jet black, Black Galaxy, Blue and White coloured are exclusive varieties in the international market. There are a number of unexplored areas in the state, which contain workable and marketable deposits, Central and state Geological agencies have started exploration to identify new varieties and areas. Vast scope exists for development of granite industry in the state. The Govt. of Andhra Pradesh have the most progressive policy for granites in the country.

World's rare and exclusive variety of black Galaxy Granite occur in Chimakurthy- Prakasam district, Mis Andhra Pradesh Mineral Development Corporation invites Private sector for establishing a Granite Park primarily basing on world famous Black Galaxy in Prakasam Nellore districts close to the port.

SLATE / PHYLLITE

There are vast deposits of Slate/Phyllite in Prakasam, Guntur and Nalgonda districts. Some of the varieties are already been exported from the State to Australia, New Zealand and European Market.

LIMESTONE SLABS

Different colours of Limestone Slabs are extensively found in Ranga Reddy, Nalgonda, Guntur, Ananthapur, Cuddapah, Kurnool & Mahbubnagar districts. They are being exploited locally and exported to different parts of the country and other countries for flooring.

Mineral Resources of Andhra Pradesh Vis-a-vis India

S,No	Mineral	AndhraPradesh (In Million Tonnes)	India (In Million Tonnes)	% of AP Reserves
1	APATITE	1.68	145,37	1.15
2	ASBESTOS	2.5 Lakh Tonnes	2.3	11
3	BARYTES	67.05	70.15	95.58
4	BAUXITE	750	2525.33	30
5	BALL CLAY	7.5	13.90	54
6	CHINA CLAY	N.A	1042,5	N.A
7	CALCITE	3.9	10.6	41
8	FIRE CLAY	11.6	696,8	2
9	COAL	13021.50	229962,28	6
10	CORRUNDUM	1071 Tonnes	15344 Tonnes	7
11	COPPER ORE	6.5	838	0.8
12	CHROMITE	2000 Tonnes	88.35	0.002
13	DOLOMITE	170(Not Totally Estimated)	4967.5	3.4

14	DIAMOND	194990 Carats	1196154	16.3
15	FELDSPAR	1.5	16.14	9.3
16	FULLERS EARTH	25	228.3	11
17	GARNET	5	39,5	12.7
18	GRAPHITE	60000 Tonnes	3.10	2
19	GOLD ORE	6.84	17.70	39
20	GYPSUM	0.24	239.4	0.1
21	ILLMENITE	21.69	90,10	24
22	IRON ORE	263	9602	3
23	KYANITE	4.65	53.42	9
24	LEAD & ZINC	7.5	179,2	4,2
25	LIME STONE	30400	76446	40
26	LIMEKANKAR	3,5	NE	N,A
27	MONAZITE SAND	32	NE	N.A
28	MANGANESE	7	176.5	4
29	MICA	0.045	N.A	N.A
30	OCHRES	NE	22.32	N.A
31	OIL & NATURAL GAS	NE	Crude Oil-764.63 Mil.Tonnes N.Gas-706.69 CU.M	N.A
32	PYROPHYLLITE	NE	5.2	N.A
33	QUARTZ & SILICA SAND	50	983.53	5

34	QUARTZITE	NE	365.52	N,A
35	RUTILE	1	6.45	15.5
36	STEATITE	5	83.66	6
37	TUNGSTEN	12	39.65	30
38	VERMICULITE	NE	312454 Tonnes	N,A

V. SURVEY AND EXPLORATION

The State Government has been conducting investigations for various minerals in the state. After the introduction of the concept of Reconnaissance Permit by the Government of India, large areas have been sanctioned under Reconnaissance Permit. The State Government has identified the Bauxite deposits of Visakhapatnam district and conducted detailed investigation. This was subsequently followed up by GSI & MECL. Based on the investigations carried out on the Limestone deposits, number of cement plants have been established in the State. The vast reserves of Dolomite have been found and the same have been obtained on Mining Lease by Visakhapatnam Steel Plant authorities. It is being utilized in their steel plant. Besides the above there are number of investigations taken by the Department and will continue to take up the same. State Government has been encouraging private participation including Multi-National Companies for taking up investigations in the State.

Ministry of Petroleum and Natural Gas, Government of India has drawn up new Exploration Licencing Policy for exploration and exploitation of Petroleum and Natural Gas under NELP' 3 Blocks of A.P. have been identified for private prospecting.

Methane which is a Natural Gas emanating from coal seams, can be extracted, processed and treated for use as fuel both in industrial and domestic sectors. Such gas, more commonly known as Coal bed Methane, has huge scope for exploitation for use as an environment friendly and cost effective fuel. This new resource is to be evaluated.

VII. RESEARCH & DEVELOPMENT

The Government of Andhra Pradesh has created "Development of Mineral Resources and Technology Up gradation Fund" with a view to study:

1. Geological, Geophysical, Geo-chemical, Mineral Aerial Photos, Satellite Imageries, Remote Sensing, Beneficiation, Mining, Forest, Environment, Technology, Utilization, Exports, Mineral Based Industries.
2. Study, Identification and Acquisition of latest technology and equipment for exploration and Development of Mineral Resources and Mineral Based Industries.
3. To conduct scientific and technical research in exploring mineral resources in particular and Geological, Geophysical, Geo-chemical, Environmental related fields in general and also to assist or collaborate with any other scientific research institutes or other universities and colleges or research centers in developing such scientific and research activities on all mines, mineral and natural resources and their exploration and utility to the common good.
4. To conduct research, survey, study, analysis, identification, developing knowhow in any field of environmental ecology, non-conventional energies and in application of such research in utilization of common good.

VIII. MINERAL BASED INDUSTRIES IN AP.

Present Status

As mentioned above A.P. has rich mineral deposits of various varieties and has a sound base for setting up of mineral based industries with a good infrastructural facility.

All the mineral based products being manufactured in the large and medium scale sector have been classified into eight groups and shown in the table. They are (i) Metals and alloys (Sponge Iron, Steel Rods, Ferro-alloys such as Ferro-manganese, Ferro-chrom and Ferro-silicon and Zinc), (ii) Cement (and asbestos cement products), (iii) Mineral Chemicals (such as Calcium Carbide, Barium and Iron Salts) (iv) Glass (of various types and shapes), (v) Ceramics

(consumer Ceramics and H.T. insulators), (vi) Refractories (including Silicon Carbide), (vii) Bricks (mechanized) and (viii) Granite and Dolerite (black granite) decorative polished stones and slabs. Particulars related to the industries, number of units, and their installed capacity are showed in the following table.

Mineral Based Industries in Andhra Pradesh

Industry	No. of Units	Total Installed capacity (tpy)
Abrasive	3	77,000
Asbestos	4	170,000
Cement	20	16,996,000
Ceramic & refractory	21	2,69,000
Fertilizers* (NPK, Urea)	4	777,000 (N)
Super Phosphate	1	3,21,000 (P205)
Ferro-manganese	1	45,000
Lead ingot		22,000
Zinc ingot		30,000
Cadmium	1	115
I Silver		30
Fibre glass	1	15,000
Caustic soda	4	52,470
Calcium carbide	1	27,000
Ferro-silicon and other ferro-alloys	3	57,500
Calcium carbide	1	2,500
Phosphoric acid	1	91,000
Sponge iron	3	340,000 **
Steel ingots	1	30,00,000
Pig iron	4	3,700,000
Sulphuric acid	6	449,200
Vinyl quartz tiles	1	12,000
Oil refinery	1	4,500,000
EAF (Mini-steel plant)	8	282,000

*Source:- Indian Minerals Year Book 2002, IBM, GOL

* Excludes SSP / SSI units ** Includes integrated steel plants

The above industries that have come up in the state are mostly due to the dynamism and entrepreneurship of individual industrialists. No doubt APMDC, APSFC, APIDC did act as a catalyst in some cases and have been helping the entrepreneurs with financial help and technical advice. But one cannot deny that the industries are entirely demand oriented and have come up to

produce whatever product is in demand. The phenomenal growths of cement and granite industry are typical examples in this direction.

In modern techno-industrial economic approach, the demand for goods is to be created. While such a philosophy is generally thought to be applicable for consumer products, it is also valid to a large extent to industrial products. Unless the basic industrial goods are manufactured, no new industries using such products either as starting points or as accessory materials can develop. Even if some such industries come up, they would have to import their requirements from other countries or from other states.

In a developing economy, the role of small scale industrial sector hardly needs to be over emphasized. In addition to various benefits accruing to the state and economy, the particular advantage of this sector is the large number of people that can be profitably engaged. It helps the common man in the villages to earn a better livelihood and due attention has been paid to this sector by the Government. "Small is beautiful", they say in economics, but it needs careful and planned hammering, chiseling and polishing before a beautiful figurine is made out of a small crude rock

VIII. DATABASE

The first step in establishing mineral based industries is the collection and codification of information pertaining to the existing ore deposits and to prepare a resource inventory. This inventory is not a mere list of reported mineral occurrences and their locations, but includes details such as reserves, grade, physical characteristics etc in relation to their ultimate utilization. The reserves were estimated from visual observations only (but not by quantitative methods of pitting, trenching or drilling). In several cases the grades were not established. When the grades are indicated, they are mostly on the basis of chemical analysis of the main element only. Classification of the ores based on their physical characteristics was not done.

It is necessary to store the data now available and that would be generated through the website to the entrepreneurs. Multitude of bits of information on various facets of different mineral deposits in different places can be advantageously stored in appropriate formats in the computer in such a fashion that the data can be retrieved at will in a required format and maps of required details can be generated.

IX. REGULATION OF MINES & MINERALS

The Industrial Policy Resolution of 1956 has spelt-out the policy as regards the role of Public and Private sectors including Mining. This resolution divided the minerals into three broad categories. The minerals included in Schedule-A were Coal, Lignite, Oils, Iron Ore, Manganese, Chrome, Gypsum, Gold, Diamonds, Copper, Lead, Zinc, Tin, Molybdenum, Wolfrinite and Atomic Minerals. Schedule-B consisted of all other minerals other than minor minerals. Schedule-C Le., third category included Minor Minerals. Earlier to the Industrial Policy resolution of 1956, all the Minerals were regulated by Mines and Minerals (Regulation and Development) Act, 1948 and the rules made there under which are called Mineral Concession Rules, 1949. In response to the Industrial Policy Resolution of 1956, the Mines and Minerals Act has been divided the minerals into three categories as stated above for the purpose of grant of mineral concessions. Though the ownership of minerals vested with the State Government, the constitution gives the Parliament, the powers to make Laws for the regulation of Mines and Minerals Development in the Public Interest. The Law that now governs the Regulation and Development by Mines and Minerals, Regulation and Development Act, 1957 and Mineral Concession Rules, 1960 framed by the Government of India. The main object of this Act and Rules is the conservation of important minerals and the efficient and economic working of mines in the national interest.

The Government of India has pronounced New Industrial Policy in the year 1991 and entered into the market economy through privatization of productive enterprises, de-regulation of the industrial organizations and liberalization of trade regimes. Keeping in view the New Industrial Policy and in tune with the same, the National Mineral Policy was revised in 1993. The salient features of the new policy are:

- 1) Introduction of foreign technology and foreign participation in exploration and mining for high value and scarce minerals.
- 2) Foreign Equity Investment in joint ventures in mining, promotion of Indian companies would be encouraged.
- 3) Foreign Investment equity would normally be limited to 50%. This limitation would not apply to captive mines of any mineral processing industry. Enhanced equity hoarding would be considered on case to case basis.
- 4) In reply to joint venture projects of minerals and metals in which the

country is deficient or does not have exportable surplus, a stipulated share of production would have to be made available to meet the needs of the domestic market before exports are allowed.

- 5) In case of ores whose known reserves are not abundant preference will be given to those who proposes to take up their mining for captive use.

Basing on the new mineral policy, in January, 1994, certain amendments have been made to M.M.(R&D) Act, 1957. The highlights of the amendments are

- a) Any company registered or incorporated in India irrespective of its foreign equity hoarding can be for Prospecting Licence or Mining Lease.
- b) 15 minerals hitherto listed in the first Schedule of MM (R&D) Act requiring prior approval of the Government of India before the State Government to grant Mining Lease or Prospecting Licence have been deleted.
- c) Maximum period for which Prospecting Licence can be granted has been increased from 2 to 3 years and these licences can be renewed so that the total period does not exceed 5 years.
- d) All mining leases shall be granted for a minimum period of 20 years and maximum of 30 years. Leases can also be renewed for 20 years.
- e) The period before which a mining lease can lapse in case the idle mines has been increased from 1 to 2 years.
- f) In order to encourage foreign investment in the mining sector, the Government of India issued guidelines increasing the areas from 25 Sq.Km to 5000 Sq.Kms. for a single Prospecting Licence to facilitate aerial prospecting with the proviso that granted area held by a single party may not exceed 10,000 Sq.Km in the entire country.
- g) In order to dispose the application expeditiously the Government has also delegated powers of renewals of PLs and MLs under Section 7(2) and 8(2) respectively to the State Governments.

The new policy has been announced to facilitate foreign investment into the mining sector with special reference to gold, diamond and non-ferrous metals.

X. MINERAL ADMINISTRATION SNF FRBRLOPMRNY

In order to facilitate mineral exploration by entrepreneurs and to provide help to domestic and foreign investors in establishing mineral based industries, the State Government has brought out certain structural changes for disposal of the

applications within pre-fixed time frame of 3,6,9 months in respect of quarry lease, Mining lease & Forest respectively (G.O. enclosed). Andhra Pradesh is the first state in the country to frame prefixed time limits for disposal of the applications which has been followed subsequently by Government of India through an amendment to the M.M.(D&R) Act, 1957 itself.

MAJOR MINERALS

Regulation and development of major minerals are governed as per Mineral Concession Rules, 1960 which are framed under section 13 of M.M. (D&R) Act, 1957.

MINOR MINERALS

The Central Government has empowered the respective State Governments to frame their own rules in the case of minor minerals under section 15 (1) of M.M. (D&R) Act, 1957. Accordingly, Andhra Pradesh has framed A.P Minor Mineral Concession Rules, 1966. Subsequently, in pursuance of Granite Conservation and Development Rules, 1999, the State Government has suitably amended the Andhra Pradesh Minor Mineral Concession Rules, 1966 in tune with G.C.D.R. 1999. These amendments will ensure greater revenue earnings, scientific exploitation, greater regulation and supervision over mining activity, removal of procedural delays and expeditious disposal of applications.

In pursuance of the 73rd Amendment to the Constitution of India (Central Act 40 of 1996), a provision has been incorporated in the Minor Mineral Rules to obtain the recommendations of Gram Sabha or Panchayats for granting of leases in the scheduled areas.

In order to improve the infrastructure facilities in the mineral bearing areas, the State Government is allocating 35% of the minor mineral revenue for the establishment of infrastructure facilities. The entire minor mineral revenue is being allocated to local bodies. The funds are being distributed in the ratio of 25:50:25 to Gram panchayat, Mandal Parishad and Zilla Parishad.

XI. MINING PLAN

The Government of India has empowered the State Government for the

approval of mining plans as per M.M. (D&R) Act, 1957 and M.C.D.R, 1988 for 29 minerals. The time stipulation for approval of mining plans by the Joint Directors of Mines & Geology is 60 days.

XII. ENVIRONMENTAL ASPECTS

The Government of Andhra Pradesh is encouraging all possible precautions for the protection of environment and control of pollution while taking up prospecting, mining or processing of minerals in various areas. Some of the important steps taken by the Government of Andhra Pradesh are insistence of restoration, reclamation, rehabilitation in a phased manner so that the entire work will be completed before the conclusion of such operations and abundance of mines. The mining lease holders have been requested to take up plantation programme in the leased areas to develop flora, fauna and save from the pollution hazards. Further, deep pits are being utilized for the purposes of storing of rain water or water harvesting for irrigation purposes etc.

Construction of both rain water harvesting and ground water recharging structures within leased areas as well as in the adjoining government lands located at higher elevation and sloping towards mining areas for environmental protection under Neeru-Meeru Programme of the State Government to conserve the scarce water resources for the overall development of the State.

XIII. EXPLOSIVES DISTRIBUTION CENTRES

The quarrying & mining involves extensive usage of explosives and needs explosive licence by each of the mine owners to stock, store & utilise explosives as per the statute. The State has contemplated to establish a Centralized Explosive Magazine & Distribution Center at cluster areas of mining activity with a view to have proper safety & security and to facilitate the mine owners to source their requirements and ensure that explosives are not misused.

XIV. PERMIT SYSTEM

Andhra Pradesh is the 1st State in the country to introduce permit system in the year 1975 for collection of revenues in advance before removal/dispatch of minerals from the mine site.

The State Government has specified the time limit, mode & place of payments of rents and royalties for mining lease holders under Clause (a) of Sub-rule(2) of Rule 27 of M.C. Rules, 1960 read with clause 3 of Part 5 of the Schedule Form-K of the Mining Lease deed through G.O.Ms.No.674, Ind. & Comm. Department, Dated.27.6.1975. Accordingly the lessee will pay the royalty for the quantities of ore or mineral intended to be transported.

In the case of minor minerals, according to Rule 34, Assistant Directors or any officer nominated are empowered to issue Temporary Permits to the lease holders to facilitate the entrepreneurs. In the case of granite, the Government has introduced the self-removal system.

XV. AP MINERAL DEALER RULES 2000

The state government has framed Mineral Dealer Rules 2000 in exercise of powers conferred by Section 23(c) of the M.M. (D&R) Act, 1957 (Act 67 of 1957) to regulate the possession, storage, trading and transport of minerals and mineral products and to check the evasion of royalty or seigniorage fee, stopping of illegal mining and quarrying and transportation in the State of Andhra Pradesh.

XVI. OBJECTIVES

<p>a) To explore for identification of mineral wealth in the state.</p> <p>b) To develop mineral resources taking into account the national and strategic considerations and to ensure their adequate supply and best use keeping in view the present needs and future requirements.</p> <p>c) To promote necessary linkages for smooth and uninterrupted development of the mineral industry to meet the needs of the country.</p>	<p>g) De-reservation of areas wherever required for proper utilization of mineral wealth.</p> <p>h) To carry on geological investigations including those in the forest areas so that mining and environment co-exist healthily.</p> <p>i) To invite private capital resources and technology both foreign and domestic for better exploration and exploitation.</p> <p>j) To increase state revenues and local</p>
---	---

<p>d) To promote research and development in minerals.</p> <p>e) To minimize adverse effects of mineral development on the forest, environment and ecology through appropriate " protective measures; and "</p> <p>f) To ensure conduct of mining operations with due regard to safety and health of all concerned.</p>	<p>employment through establishment of mineral based industries.</p> <p>k) To ensure proper vigilance and supervision of mining activities with a view to arrest illegal mining, transportation and storage of minerals.</p> <p>l) To create data base on mineral resources of the state.</p>
---	---

XVII. STRATEGY

<ol style="list-style-type: none"> 1. Strict implementation of time schedule for grant of leases. 2. Promulgation of Mineral Dealers Act. 3. Simplification of Procedures. 4. Exploration in the extension areas around existing leases. 5. Reorganization of Human Resources, Training & Motivation for achieving the planned results. 6. Investigation, Exploration & Utility of all the minerals from rocks, low grade ores. 	<ol style="list-style-type: none"> 7. Exploration of minerals at greater depths environs / formations. 8. Creation of infrastructure facilities to tap the minerals from greater depths. 9. Scientific and sustainable development of all the mineral resources. 10. Reassessment of mineral resources and identification of newer technologies and sustainable development of mineral based industries.
---	--

XVIII. EXPORT PROMOTION

Granite, Limestone Slabs, Slate, Mica, Manganese, Barytes, Quartz and Feldspar have the export potential from the state. In order to promote export of these minerals in larger quantities and also to project the availability of the various shades and types of minerals present in the state to the world over, the state government will be taking the following measures:

<ol style="list-style-type: none"> 1. Encourage export of minerals in value added form as far as possible. 2. Giving priority in the grant of Mining Leases to those who put up Export Oriented Units in the State. 3. Efforts will be made to develop ports specifically to facilitate export of minerals. 	<ol style="list-style-type: none"> 4. Efforts will be made to use standard equipment on the data base as per the U.N.EC. on mineral resources. 5. Visits to National and International trade fairs, Exhibitions and Seminars. 6. Fairs and Exhibitions will be organized in the State, periodically, so that the type of minerals and decorative stones available in the State may have the desired publicity.
--	---

XIX. POLICY IMPLEMENTATION

The Government has constituted 2 committees - State Investment Promotion Board (SIPB) & State Investment Promotion Committee (SIPC). SIPC is headed by Chief Secretary and SIPB is headed by Hon'ble Chief Minister of A.P. These committees meet frequently and ensure the progress of the industries including mineral based industries. The committee clears the bottlenecks, if any, in the meeting.

The Government is also appointing Escort Executives to pursue the projects for expeditious implementation. The Government has enacted a new legislation called Single Window Act 2002 recently for one time clearance by various departments for expeditious implementation of the projects.

XX. INVESTMENT OPPORTUNITIES

Infrastructure

The State Government have introduced New Industrial Policy 2000-2005 with greater emphasis for quality infrastructure facilities such as Roads, Electricity, Water etc. which will be provided in the industrial areas. Government

also facilitates creation of allied infrastructure such as telecom, transportation links, housing complexes nearer to industries & container depots. The Government will share the cost of infrastructure upto 25% or RS.100 Lakhs in other than industrial areas. Captive power generation will be allowed for all industrial units.

Exemptions

50% exemption will be allowed on stamp duty, registration fee and transfer duty of lands meant for industrial use. Exemption of stamp duty and registration fee for loan agreement, credit deeds, mortgage & hypothecation deeds.

Investment Subsidy

The Government gives 20% investment subsidy on Capital investment on land, buildings & plants and machinery of RS.20 Lakhs to eligible Small Scale Industries and tiny units. Out of 20% investment subsidy, 50% upto a maximum of Rs.10.00 Lakhs will be given as cash subsidy and balance subsidy (50%) for import of new machinery, training, testing & certification facilities. An additional cash subsidy of 10% on capital investment subject to a limit of RS.10 Lakhs will be given to SC / ST entrepreneurs in the eligible Small Scale Industries & Tiny units

Single Window

The Government under single window registration clears cases upto RS.1.00 Crore investment by District Collector, upto Rs.25.00 Crores investment by Chief Secretary under SIPC and beyond Rs.25.00 Crores investment by SIPB headed by Hon'ble Chief Minister. In addition, all industrial units will be exempted from Non-agriculture Land Assessment & Environment Tax equal to the cost of plantation and maintenance for 5 years. In case of mega projects with capital investment exceeding Rs.500 Crores, Government may consider a special package of incentives except tax based incentives on a case to case basis.

XXI. CONCLUSION

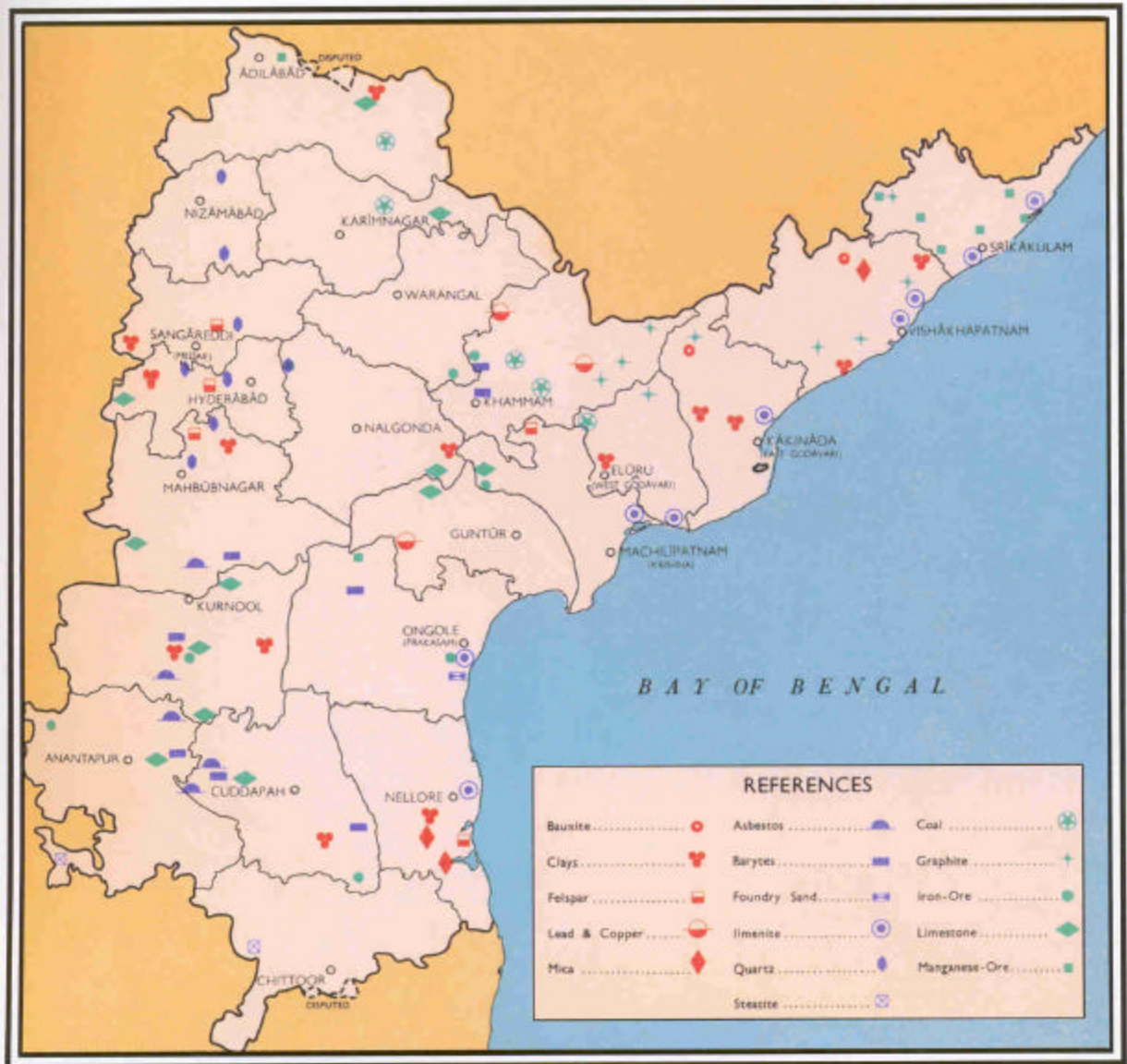
Minerals are essential inputs for any economic development and form an important infrastructure for overall growth of all the sectors. Exploration, Exploitation, Processing & Development of Strong Mineral base of the state will be key to achieve the aim of the VISION-2020. Mining Sector will create considerable wealth to the State thus significantly contributing to the State's GDP.

The objectives as outlined in MM (D&R) Act 1957, National Mineral Policy Le. Exploration, Exploitation, Development, Conservation, Safety, Environment and Judicial utilisation of mineral wealth shall be the guiding principles. The goals and envisaged growth of 10 - 12 % under Vision 2020 document will be the aim to achieve by bringing necessary policy and structural changes. The policy will aim at continuous mineral prospecting, exploration, resource audit, dissemination of mineral information, focus on developing high potential minerals, adopting a policy framework that allows sustainable use of the state mineral wealth, involvement of local people, developing infrastructure that enables access to minerals and institutions that support the development of mining, actively seeking private investment in mining, transparency in mineral regulation, well structure relationship with the entrepreneurs / investors, simplified approval process, pro actively attract private sector participation, secure land / mine rights to the investors, creating reasonable and mutually acceptable conditions for development, framing mineral specific policies and quick response in mineral administration.

The Citizen charter has the components of integrity, dedication, judiciousness, transparency and accountability, besides objectivity, courtesy and understanding. The goal under the National Mineral Policy & Vision will be made achievable through the adoption of modern management systems and benchmarking in dealing with public, entrepreneurs, investors and problems for overall promotion, regulation and development of mineral sector in the state.

* * *

MINERAL MAP OF ANDHRA PRADESH



GEOLOGICAL MAP OF ANDHRA PRADESH

