Indian Minerals Yearbook 2021

(Part- I)

60th Edition

STATE REVIEWS
(Andhra Pradesh)

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648
E-MAIL : cme@ibm.gov.in
Website: www.ibm.gov.in

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ANDHRA PRADESH

Mineral Resources

Andhra Pradesh is the sole producer of apatite. The State is the leading producer of barytes, ball clay, dolomite, garnet (abrasive), laterite, limestone, quartz, quartzite, silica sand and vermiculite. It accounts for 92% barytes, 40% calcite, 41% mica, 31% each kyanite & garnet, 19% titanium minerals, 16% bauxite, 15% dolomite, 13% sillimanite and 12% each vermiculite & limestone resources of the country. Andhra Pradesh is endowed with the internationally known black, pink, blue and multicoloured varieties of granites. Krishna-Godavari basin areas in this State have emerged as new promising areas for hydrocarbons, especially natural gas.

Important minerals occurring in Andhra Pradesh are: **apatite** in Visakhapatnam district; **asbestos** in Cuddapah district; **ball clay** in West Godavari district; **barytes** in Anantapur, Cuddapah, Krishna, Kurnool, Nellore & Prakasam districts; **calcite** in Anantapur, Cuddapah, Kurnool & Visakhapatnam districts; **china clay** in Anantapur, Chittoor, Cuddapah, East Godavari, West Godavari, Guntur, Kurnool, Nellore & Visakhapatnam districts; **coal** in Godavari Valley Coalfield; **corundum** in Anantapur districts; **dolomite** in Anantapur & Kurnool districts; **felspar** in Anantapur, Cuddapah, West Godavari, Nellore & Vizianagaram districts; **fireclay** in Chittoor, Cuddapah, East Godavari, West Godavari, Kurnool & Srikakulam districts; **garnet** in East Godavari, Nellore & Srikakulam districts; **granite** in Anantapur, Chittoor, Cuddapah, Guntur, Krishna, Nellore, Prakasam, Srikakulam & Vizianagaram districts; **iron ore (haematite)** in Anantapur, Cuddapah, Guntur, Krishna, Kurnool & Nellore districts; **iron ore (magnetite)** in Prakasam district; **lead-zinc** in Cuddapah, Guntur & Prakasam districts; **limestone** in Anantapur, Cuddapah, East Godavari, West Godavari, Guntur, Krishna, Kurnool, Nellore, Srikakulam, Visakhapatnam & Vizianagaram districts; **manganese ore** in Srikakulam & Vizianagaram districts; **mica** in Nellore & Visakhapatnam district; **ochre** in Anantapur & Cuddapah, West Godavari, Guntur, Kurnool & Visakhapatnam districts; **pyrophyllite** in Anantapur, Chittoor & Cuddapah districts; **quartz/silica sand** in Anantapur, Chittoor, Cuddapah, West Godavari, Guntur, Krishna, Kurnool, Nellore, Prakasam, Srikakulam, Visakhapatnam & Vizianagaram districts; **quartzite** in Kurnool, Srikakulam, Visakhapatnam & Vizianagaram districts; **talc/soapstone/steatite** in Anantapur, Chittoor, Cuddapah & Kurnool districts & **vermiculite** in Nellore & Visakhapatnam districts. **Petroleum & natural gas** deposits of importance are located in the onshore and offshore areas of Krishna-Godavari basin of the State.

Other minerals that occur in the State are **bauxite** in East Godavari & Visakhapatnam districts; **chromite** in Krishna district; **copper** in Guntur, Kurnool & Prakasam districts; **diamond** in Anantapur, Krishna & Kurnool districts; **gold** in Anantapur, Chittoor & Kurnool districts; **graphite** in East Godavari, West Godavari, Srikakulam, Visakhapatnam & Vizianagaram districts; **gypsum** in Guntur, Nellore & Prakasam districts; **kyanite** in Nellore & Prakasam districts; **magnesite** in Cuddapah district; **pyrite** in Kurnool district; **sillimanite** in West Godavari & Srikakulam district; **silver** in Guntur district; **titanium minerals** in East Godavari, Krishna, Nellore, Srikakulam & Visakhapatnam districts; and **tungsten** in East Godavari district (Tables-1 & 2).

Exploration & Development

The details of exploration activities conducted by various agencies for minerals during 2020-21 are furnished in Table - 3.

During 2020-21, National Oil Companies (NOC) continued their operations for exploration of oil and gas in the State.

Production

Many important minerals are produced in Andhra Pradesh. The principal minerals produced in the state were Natural Gas (ut.), Petroleum (crude), Manganese Ore, Limestone, Vermiculite etc. The value of minor minerals' production was estimated at ₹. 12,120 crore for the year 2020-21. The number of reporting mines in the State was 104 in 2020-21 in case of MCDR minerals (Table-4)

Table –1: Reserves/Resources of Minerals as on 01.04.2020: Andhra Pradesh

Mineral	Unit	Reserves				Remaining Resources								Total resources (A+B)
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122			STD221	STD222						
Apatite	Tonne	27715	-	1680	29395	-	-	-	-	-	200163	-	200163	229558
Asbestos	Tonne	-	-	-	-	684839	39126	16553	-	1541	55936	-	797995	797995
Bauxite	000' Tonnes	-	-	-	-	-	-	-	188971	138120	288176	-	615267	615267
Chromite	000' Tonnes	-	-	-	-	-	-	-	-	-	#	-	#	#
Copper														
Ore	000' Tonnes	-	-	-	-	686	-	105	-	5791	1000	-	7582	7582
Metal	000' Tonnes	-	-	-	-	6.88	-	1.05	-	97.45	8.32	-	113.7	113.7
Diamond	Carat	-	-	-	-	-	-	-	200483	1524317	98155	-	1822955	1822955
Garnet	Tonne	-	-	-	-	1196087	237025	1359988	18	8800000	5674011	-	17267129	17267129
Gold														
Ore (Primary)	Tonne	3221400	-	36700	3258100	2485133	1857500	1548115	291000	55000	6236150	-	12472898	15730998
Metal (Primary)	Tonne	5.24	-	0.06	5.3	11.87	3.99	4.92	1.08	0.17	19.84	-	41.87	47.17
Graphite	Tonne	-	-	-	-	-	-	1135	0	1122	1136018	-	1138275	1138275
Iron Ore (Haematite)	000' Tonnes	32893	-	11851	44744	42461	68382	66330	377	5863	144374	23085	350872	395616
Iron Ore (Magnetite)	000' Tonnes	-	-	-	-	114210	-	-	13800	1266666	68527	9180	1472383	1472383
Kyanite	Tonne	-	-	-	-	-	-	399	-	-	32003829	-	32004228	32004228
Lead-Zinc Ore														
Ore	000' Tonnes	-	-	-	-	-	-	-	1000	4159	17530	-	22689	22689
Lead metal	000' Tonnes	-	-	-	-	-	-	-	28.7	119.53	688.65	-	836.88	836.88
Zinc metal	000' Tonnes	-	-	-	-	-	-	-	12.4	43.57	7.19	-	63.16	63.16
Limestone	000' Tonnes	2815170	2133	439387	3256690	1302360	404217	1164592	115264	2129536	18066740	3399422	26582132	29838822
Magnesite	000' Tonnes	-	-	-	-	-	-	-	-	-	80	-	80	80
Manganese Ore	000' Tonnes	6848	1006	234	8088	1000	718	1990	465	10730	6838	15	21756	29844
Pyrite	000' Tonnes	-	-	-	-	-	-	-	-	-	880	-	880	880
Sillimanite	Tonne	1451556	0	218469	1670025	-	11070	462830	-	7430300	1491539	-	9395739	11065764

(contd)

Table - 1 (concld)

Mineral	Unit	Reserves				Remaining Resources								Total resources (A+B)
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122										
Silver														
Ore	Tonne	-	-	-	-	-	-	16950000	-	-	-	-	16950000	16950000
Metal	Tonne	-	-	-	-	-	-	128.13	-	-	-	-	128.13	128.13
Titanium	Tonne	-	-	-	-	-	31365	-	-	-	76702509	-	76733874	76733874
Tungsten														
Ore	Tonne	-	-	-	-	-	-	-	3640000	4700800	5952500	509000	14802300	14802300
Contained WO_3	Tonne	-	-	-	-	-	-	-	5096	6574.64	8273.65	318.28	20262.57	20262.57
Vermiculite	Tonne	45305	-	28888	74193	7349	917	5850	9800	5127	88865	-	117908	192101

Figures rounded off
 # Negligible

(contd)

Table – 2: Reserves/Resources of Coal as on 1.4.2021: Andhra Pradesh

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total/Godavari Valley	921	901	425	2247

Source: *Coal Directory of India, 2010-21.*

Table – 3: Details of Exploration Activities in Andhra Pradesh, 2020-21

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Manganese							
Vizianagaram	Jaggarajupeta Block	1:2000	1.5	9	720	-	Preliminary Exploration (G3) for manganese in Jaggarajupeta Block, Vizianagaram District, Andhra Pradesh : Detailed mapping (DM) in an area of 1.5 sq. km on 1:2,000 scale was mapped along with collection of BRS, PCS, PS samples. Geologically, block area is occupied by the garnet-sillimanite gneiss, quartzo feldspathic gneissandcalc-granulite of Khondalite suite later traversed by pegmatite and quartz veins. The kaolinisation, feldspathisation with surface encrustation of manganese along with iron oxides. The trend of the mineralization varies from N80°W to N60°W in the western part, whereas in eastern part of the block is almost E-W with a dip of 45°-55° towards north. A total of 720m drilling were done in nine boreholes to check the depth continuity and resource estimation of demarcated manganese mineralisation. Out of nine boreholes (AVJ-1, AVJ-2, AVJ-3, AVJE-1, AVJE-2, AVJE-3, AVJE-4, AVJE-5, AVJE-2A), eight boreholes were drilled at first level, while one borehole (AVJE-2A) was drilled at second level. In borehole AVJE-2, two Mn zones were intersected, from 10.50 to 24.00 m and 33.00 to 51.00 m. In AVJE-1, the Mn zone was recorded at depth from 22.5 to 24.00 m and 36.00 to 39.00 m, in AVJ-1, the Mn zone was intersected from 42.30 to 49.10 m and 58.50 to 85.00 m. In AVJ-2 Mn zone was intersected from 45.10 to 50.10 m and from 63.50 to 64.50 m. In Borehole AVJE-4, the Mn zone was encountered at depth of 50.10 to 58.90m. In AVJE-2A (II level), Mn zone was intersected

(contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							at a depth of 47.10 to 51.40 m., 110.80 to 118.50 m and 122.40 to 136.00 m with visual estimation of Mn 15–20%.
Srikakulam	Garraju-Cheepurupalli Block	-	1:00	10	720	26	Preliminary exploration for Manganese in Garraju–Cheepurupalli Block, Eastern Ghat Mobile Belt, Srikakulam District, Andhra Pradesh (G3). Detailed Mapping of 1 sq. km area was covered in the FS 2020-21. The area comprises of Khondalite Suite of rocks. The manganese mineralization is associated with quartzo-feldspathic gneiss and quartzite. Out of 26 bedrock samples, average Mn value of 17 samples more than 10%. About 10 boreholes was were completed with 720 m drilling. A total of 21.3 m thick in ASG-5 and 27 m in ASG-3 manganese zone were observed. In boreholes ASG-1 and ASG-6 Mn mineralisation encountered 11m thick manganese zone. Whereas in ASG-17 and ASG-19 Mn zone was intersected from 39 to 54m and from 30 to 36m respectively.
Vizianagaram	Vommi block,	1:2000	2.00	-	-	-	Preliminary exploration for manganese in Vommi block, Vizianagaram district, Andhra Pradesh (G3): The item was taken up with an objective to assess potential of manganese mineralization. An area of 2 sq km was covered as a part of detailed mapping on scale of 1:2000. Garnet–sillimanite gneiss is the main lithology exposed in the area whereas calc granulite was also seen as thin bands and as unmappable patches within the khondalite. Dominant foliation trending in NE-SW direction with a variable dip of 45°-55° towards SE was observed. The Mn mineralisation wsa associated with khondalite and was present at the contact with altered/kaolinised quartzo-feldspathic gneiss. The ore occureed in forms of botryoidal small bands and concentric layers. Under microscope, minerals identified were mainly Psilomelane,

(contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							Pyrolusite and Manganite, associated with limonite, goethite and quartz as gangues. Disposition of old manganese pits and excavated pits/ trenches marked the mineralised zone, which extended for a length up to 1000 m and width, varied from 10-20m.Analytical results of bedrock samples ranged from 0.04– 9.66% MnO and pitting/trenching samples showed MnO range from 0.11 to 9.37%.
Srikakulam	Tilaru -Nimmada	1:12,500	100.00	-	-	235	Reconnaissance survey for manganese mineralization in Tilaru–Nimmada areas, Srikakulam district, Andhra Pradesh (G4): Large-scale Mapping (LSM) of 100 sq. km area on 1: 12,500 scale was carried out along with collection of 100 BRS, 100 PTS, 5 PCS, 20 PS and 10 ore microscopy samples in the block during the field season 2020-2021. The manganese mineralisation was observed in the form of manganiferous dissemination as thin veinlets and stringent which were associated with kaolinised quartzo–feldspathic gneiss and garnet–sillimanite gneiss. Chinna Bommidi having dimension of 300 m of strike length and 25 m of width in Chinna Bommidi area (MnO: 0.01% to 0.35%) was observed. The observed overburden in this area was 5-10 m. Alteration zone with manganese dissemination and thin veinlets along S1 plane were observed near Kota Bommali having strike length of 300 m and width of 2-10m with overburden of 5-10 m (MnO: 0.04% to 2.37%). In Yetturalapadu, Mn occurrence in the form of thin veinlets along S1 foliation was observed within the garnet– sillimanite gneiss. On the hill 130, observed that the Mn-dissemination and encrustation in the garnet-sillimanite gneiss having dimension of 10 m thick and 300m strike were observed.
Gold							
Chittoor and Kadapa	Araveedu-Shivapuram area	1:12,500	125	-	-	202	Reconnaissance survey for gold and associated mineralization in Araveedu-Shivapuram area, Chittoor and Kadapa districts, Andhra Pradesh (G4): An area of 100 sq km was covered by LSM on 1:12,500 scales with an additional of 25 sq km area where detailed sampling was carried out on the light of encouraging result reported by previous

(contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							workers near Shivapuram (0.26 g/t Au). Collected 101 bedrock samples, 51 soil samples, 50 nos. of pit/trench samples were collected. Major lithounits exposed in the study area are granite gneiss/migmatite gneiss, amphibolite, quartz-mica schist, BIF, meta-acid volcanics, meta-basalt, monzo/syeno granite, granodiorite and dolerite. Meta-basalt, amphibolite, quartz-mica schist, Banded Iron Formation and meta-acid volcanics represent the Veligallu Schist Belt. Sulphides like pyrite, arsenopyrite and chalcopyrite, oxides and hydroxides like haematite, goethite and magnetite observed within the BIF band, amphibolite, quartz-mica schist and meta-acid volcanics. Out of 202 samples analysed for gold, only 12 were samples with Au more than 50 ppb were reported in and around Shivapuram, Mallayakonda Reserve Forest and Nagireddigaripalle. Highest value of 354 ppb was analysed in one of the trench samples collected near Upparapalle.
Diamond (including area of Tumkur district of Karnataka)*							
Anantapur	Ramagiri-Nutimadugu area	-	740	-	-	163	Reconnaissance survey for primary source rocks for diamond in Ramagiri-Nutimadugu area of Eastern Dharwar Craton, Anantapur district of Andhra Pradesh and Tumkur district of Karnataka (G4): Around 740 sq km area was covered under reconnaissance survey and 163 stream sediment samples were collected from favourable trap sites and processed for heavy mineral separation. The study of stream sediment sample revealed that the present area contains heavy minerals like chromites, spinels, ilmenites, garnets, diopsides, epidotes, amphiboles, zircons, apatites, tourmalines and sulphides. Suspected Kimberlite indicator minerals were separated under stereo-zoom microscope and submitted for EPMA studies to confirm their Kimberlitic affinity. Based on EPMA data and the help of end member recalculation, the area was further divided into two blocks. One area was Nutimadugu in the northern part of the toposheet where magnesian ilmenites were

(contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							recovered, and another area was Gangampalli, southeastern part of toposheet where both chrome spinel and magnesian ilmenites were recovered. MgO-TiO_2 plot suggests that ilmenites recovered from the above two area were of kimberlitic.
Base metal							
Guntur	Vemulurupadu Peddapalakaluru area	1:12500	50	-	-	19	Reconnaissance survey for copper in Vemulurupadu Peddapalakaluru area, Guntur District, Andhra Pradesh (G4): Large-Scale Mapping of 50 sq.km area on 1:12,500 scale was carried out. The main litho-units were garnet sillimanite gneiss and leptynite of Khondalite Suite, pyroxene granulite and charnockite of Charnockite Suite and garnetiferous quartzofeldspathic biotite gneiss (GQFB) of Migmatite Suite belonging to the EGMB.Mineralisation observed as pyrite, chalcopyrite and pyrrhotite within garnetiferous quartzo-feldspathic biotite gneiss, charnockite and sheared quartz vein. Chemical analyses for 19 bedrock samples showed Cu ranging from 0.0095% to 2.62%. Pb values from <10 ppm to 35 ppm, Zn values range from 25 ppm to 145 ppm. The highest value recorded for Cu was 2.62% from malachite stained zone associated with pyrite and chalcopyrite grains within quartzofeldspathic biotite gneiss from the wall of abandoned quarry, south of Village Turkapalem.
Nellore	Masayapeta Block	-	-	14	1910	-	Preliminary exploration for copper and associated mineralisation in Masayapeta block, Nellore district, Andhra Pradesh (G3): This Preliminary exploration was taken up in FS 2019-20 & 2020-21, to delineate the mineralised zone by drilling boreholes, and to estimate resources. A total of 1910 m of drilling in 14 boreholes were carried out to intersect/test geological and geophysical anomaly. Three mineralised bands such as, southern, northern and western band have been demarcated with cut off of 0.2% Cu. In Southern band (~250m strike length) major copper zones were intersected in boreholes APMAS-1, APMAS-10, APMAS- 19 (2nd level) and APMAS-16. In northern band (~300m strike length), copper zone was intersected in boreholes APMAS- 4 and APMAS-9 and western

(contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							band (~100m strike length) copper zones were intersected in Borehole APMAS-11. Ore resource was calculated by cross section method. Total 1.15 million tonnes of Cu ore with 0.53% Cu average grade had been calculated by cross section method at 0.2% cut-off. In LV section, the resource was 0.98 million tonnes with 0.53% average grade of Cu at 0.2% cut-off.
YSR Kadapa	Mittapalle Block	1:2000	1.2	-	-	134	Reconnaissance survey for Lead & Zinc and associated mineralisation in Mittapalle block, YSR Kadapa district, Andhra Pradesh (G3): During FS: 2020-21, G4 stage exploration was taken up in Mittapalle block, Kadapa district, Andhra Pradesh with an objective of resource assessment for Pb, Zn & associated mineralisation. Detailed geological mapping of the Mittapalle block with 1.2 sq. km area was completed on 1:2000 scale. Pb and Zn mineralisation in the area was hosted by dolomite and mineralisation occur as veins, veinlets, stringers, lenses, vug-fillings and disseminations. A total 104 channel samples, 10 PCS, 20 pitting & trenching samples were collected. Ground geophysical surveys (IP and resistivity) were also completed. Three potential mineralised dolomite bands (BAND I, BAND II and BAND III) have been identified in the area. BAND I with a strike length of 900 m had width varging from 8 to 88 m. Strike trending in NNW to SSE had its dip (20°- 55°) towards east. Surface bedrock sampling show weighted average of (Pb+Zn) ranging from 2.33% to 2.56%, wt. avg. of Pb ranging from 50 ppm to 3.8% and wt. avg. for Zn ranging from 175 ppm to 1.80%. BAND II with strike length of 930 m had width varying from 10 to 66m was seen trending in NNW to SSE direction with high to moderate dip (34° to 67°) towards west. Surface bedrock sampling show weighted average of (Pb+Zn) ranging from 225 ppm to 2.47%, wt. avg. of Pb ranging from 50 ppm to 0.31% and wt. avg. for Zn ranging from 175 ppm to 5.85%. BAND III with an outcrop width varying between 10 and 30 m and trending NNW to SSE direction showed moderate dip (40°- 60°) towards west.

(contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
YSR Kadapa	Jaukulapalle block	1:2000	1.0	-	205.45	131	Preliminary exploration for Lead & Zinc and associated mineralisation in Jaukulapalle block, YSR Kadapa district, Andhra Pradesh (G3): A G-3 stage exploration was taken up in Jaukulapalle block, Kadapa district, Andhra Pradesh with an objective of resource assessment for Pb, Zn & associated mineralisation. Detailed geological mapping of the Jaukulapalle block for 1 sq. km area was completed on 1:2000 scale.A total of 60 channel samples, 44 core samples, 7 PCS, 20 pitting & trenching samples were collected. Ground geophysical surveys (16.5 L. km IP & Resistivity 15 L. km) were also carried out in Jaukulapalle block. Detailed mapping brought out two potential mineralised dolomite bands. BAND I with strike length of about 550 m had width varying between 10 and 12 m. Dolomite band was seen trending NNW to SSE and showed low to moderate dip (22° - 40°) towards west. In BAND I, Zn value ranged from 25 ppm to 12.37% with a mean value of 2.94% and Pb values ranges from 5 ppm to 0.50% with a mean value of 0.04%. The (Pb+Zn) values ranged from 35 ppm to 12.47% with a mean value of 2.99%. Old working and old pits of small dimension was also noticed. BAND II trending NNW to SSE showed low to moderate dip (20° - 27°) towards east. It had strike length of 290 m with width ranging from 6 to 30 m. In BAND II, Zn value ranged from 164 ppm to 25.10% with a mean value of 2.69% and Pb values ranged from 65 ppm to 19.67% with a mean value of 0.74%. The (Pb+Zn) values ranges from 342 ppm to 25.44% with a mean value of 3.43%. A total of 205.45 m of drilling target were achieved by 31st March 2021.
Tungsten							
Anantapur	Balepalyam-Ramagiri area	1:12500 1:2000	100 1.5	- -	- -	75	Reconnaissance survey for tungsten and associated mineralization in Balepalyam- Ramagiri area, Anantapur district, Andhra Pradesh (G4): Large scale mapping of 100 sq.km area on 1: 12,500 scale and detailed mapping of 1.5 sq. km. area on 1:2000 scale, were carried out in Balepalyam- Ramagiri area of Ramagiri-Penakacherla Schist Belt, Anantapur District, Andhra Pradesh. Total 27 nos. of discontinuous (contd)

Table – 3 (contd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							quartz–tourmaline veins of 30 to 50 m length and 5 to 30m width within granodiorite gneiss were recorded during detailed mapping. Tiny specks of disseminated scheelite were observed in 8 nos. of these quartz veins. Trenches dug across the strike of these discontinuous veins revealed that these veins seen to continue at depth. Chemical analysis of 76 channel samples collected across the veins revealed tungsten (W) values varying from 5.04 ppm to 1,868.09 ppm with an average of 155.75 ppm. Among the 27 quartz–tourmaline veins, four veins of 5–30 m thickness and 30–50m length, yielded tungsten values of more than 500 ppm. Based on these values, a mineralised zone of 300 m by 150 m was delineated 2.5 km south-east of Balepalyam. Trench samples collected from this mineralised zone showed across promising tungsten,bearing veins and yielded W values between 7.14 and 22.32 ppm. Apart from the tungsten values, promising values of tin (Sn) was also observed, varying from 5.12 ppm to 442.35 ppm, in soil samples collected from the demarcated mineralised zone. Additionally, Molybdenum (Mo) and Copper (Cu) values, recorded from different quartz veins throughout the LSM area, were observed to be varying from 1 to 32.39 ppm and 1 ppm to 0.5% respectively.
Chittoor	Bisanattam-Gudipalli-Sanganapalli	-	-	-	-	53	Reconnaissance survey for molybdenum and associated mineralisation in Bisanattam–Gudipalli–Sanganapalli area of Chittoor district, Andhra Pradesh (G4): Delineate potential zones and possible occurrences for molybdenum and associated mineralisation in southern part of Kolar Schist Belt (KSB) and granitoids (PGC II) of Eastern Dharwar Craton is to be carried out. Chemical results (received so far) of 1 BRS and 2 Trench samples, collected from suspected mineralised zone near Avulatippanapalli showed anomalous Au values of 2.89 ppm, 1.26 ppm and 3.41 ppm respectively. Chemical results of Mo received for 10 soil samples and 40 BRS samples till date had values ranging from 1.82 ppm to 5.35 ppm for soil samples and a maximum of 188.46 ppm for BRS

(contd)

Table – 3 (concld)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							sample. An anomalous value of Cu of 1,519 ppm was recorded from a blue–grey quartz vein near Athinattam.
Kadapa	Mangampeta	-	100	-	-	-	Reconnaissance Survey for Barytes in the southern extension of the Mangampeta Baryte Deposit, Kadapa District, Andhra Pradesh (G4): Large-scale Mapping of an area of 100 sq. km was carried out for baryte investigation in the southern extension of Mangampeta baryte mine, Kadapa district, Andhra Pradesh. The area comprised rocks of Cumbum Formation of Nallamalai Group. Outcrop of sulphide (pyrite and chalcopyrite) bearing quartzite of about 500 m strike length and 15-20m width was exposed near eastern flank of Ballireddypalli hill. Analytical result of bedrock samples showed Ba value ranging from 95 to 5,485 ppm with an average of 903.85 ppm. Trenches dug near Ballireddypalli showed Ba values ranging from 377 ppm to 662 ppm with an average of 529 ppm.

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Manganese Ore							
Department of Mines & Geology, Andhra Pradesh							
Vizinagaram	Sadanandapuram, Gurla mandal & Chinnabantupalli, Merakamudim mandal	-	-	-	-	-	In Vizianagaram district, G3 level exploration was carried out in Sadanandapuram village, Gurla mandal and Chinnabantupalli village, Merakamudim mandal covering an area of 36 hect ares and 45 hect ares respectively by geological mapping, gravity and magnetic surveys. In Sadanandapuram area, 10 boreholes were drilled to a depth of 677.00 m whereas in Chinnabantupalli area, 12 boreholes were drilled to a depth of 831.00 m. The sampling in both areas were in progress. Reconnaissance survey for manganese was taken up in villages of Batuva, Mandiravalasa (Garividi mandal), Nimmalavalasa (Cheepurupalli Mandal) and Peddalingalavasala (Laveru Mandal) and magnetic and gravity survey covered 243 ha, 300 ha, 445 ha and 472 ha, respectively. In Batuva area, 243 ha, were covered by magnetic & gravity survey and 8 boreholes were drilled to a depth of 542 m; in Mandiravalasa area, 300 ha were covered by magnetic & gravity survey and 8 boreholes were drilled to a depth of 540 m; in Nimmalavalasa area, 445 ha was covered by magnetic and gravity survey and 10 boreholes were drilled to a depth of 309 m; in Peddalingalavasala area, 472 ha were covered by magnetic & gravity survey.

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
MECL							
Diamond							
Anantpur	Kalyandurg-Timmasumudram block	1:12500	1172	-	-	-	In Andhra Pradesh, a G4 stage survey for Kimberlite Clan of Rocks (KCR) was carried out with an objective to demarcate the Kimberlite clan diamond - bearing formation, collect stream sediments samples,estimate resources, etc. in Kalyandurg–Timmasumudram block, Anantpur district. An area of 1,172.00 sq.km was mapped on of 1:12, 500 scale and a total of 44 samples including 40 stream sediments samples were collected.
Department of Mines & Geology, Andhra Pradesh							
Limestone							
YSR Kadapa	Bhima-gundam block Peddamudium	-	6.979	34	749.00	505	
YSR Kadapa	Gundlakunta	-	12.58	68	2825.00	2713	-
YSR Kadapa	Dommara-nandhyala block, Mylavaram	-	20.1	101	5409.00	5070	-
YSR Kadapa	Devaudi block, Jammalamadugu	-	17.19	100	4085.50	3491	-
Guntur	Madinapadu block. Dachepalli	-	6.60	38	2328.00	2355	-
	Mutyalampad-utangeda block, Dachepalli	-	4.80	28	2034.00	2015	-
	Tageda block, Dachepalli	-	7.16	39	2850.00	2993	
	Ramapuram block, Dachepalli	-	4.07	23	1693.00	1758	

Table-4: Mineral Production in Andhra Pradesh, 2018-19 to 2020-21 (Excluding Atomic Minerals)

(Value in ₹'000)

Mineral	Unit	2018-19			2019-20			2020-21 (P)		
		No. of mines	Quantity	Value$	No. of mines	Quantity	Value$	No. of mines	Quantity	Value$
All Minerals		**133**		**119550100**	**122**		**166218264**	**104**		**131228966**
Natural Gas (ut.)	m c m	-	1081	-	-	912	-	-	827	-
Petroleum (crude)	'000t	-	296	-	-	243	-	-	195	-
Gold *	kg	1	-	-	1	-	-	1	-	-
Iron Ore	'000t	16	654	402616	18	825	613393	12	360	275300
Manganese Ore	t	28	293679	1039486	27	330530	1059109	22	250255	987075
Garnet (abrasive)	t	2	72521	1068152	-	-	-	-	-	-
Sillimanite %	t	-	31243	288810	-	-	-	-	-	-
Limestone	'000t	82	48295	10227864	72	42532	9267248	68	41148	8766490
Vermiculite	t	4	2286	1372	4	2190	1414	1	750	469
Minor Minerals		-		- 106521800	-	-	- 155277100	-	-	- 121199632

Note : *The number of mines excludes Fuel and Minor minerals.*
$ Excludes the value of Fuel minerals.
** Only labour reported.*
% Associated with Garnet (abrasive)

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, the principal mineral-based industries in the Organised Sector in the State are provided in Table-5.

Table – 5 : Principal Mineral-based Industries

Industry/plant	Capacity ('000 tpy)
Asbestos/Cement sheets	
Hyderabad Industries Ltd, Ibrahimpatnam, Distt Krishna	3000
Ramco Industries, Ibrahimpatnam, Distt Krishna	NA
Cement	
ACC Ltd, (formerly, Encore cement), Vishakhapatnam (G)	300
Andhra Cements Ltd, (Visaka Cement Works), Durga Nagar, Distt Visakhapatnam (G)	540
Andhra Cements Ltd, Durga Cement Works, Dachepalli, Distt Guntur	2310
Anjani Portland Cement Ltd,Chintalapalem, Mellacheruvu	1925
Bharthi Cement Corp. Pvt. Ltd, Nallingayapalli, Distt Cuddapha	5000
Bhavya Cement, Thangeda, Distt Guntur	1400
BMM Cement Ltd, Gudipadu, Yediki	950
Dalmia Cement (Bharat) Ltd, Cuddapha	4060 2600 (Clincker)
Deccan Cement Ltd, Ravipahad, Nareducherla	1800
Deccan Cement Ltd, Ravipahad, Palakeedu Nalgonda	1800
Greygold Cement Ltd, Hyderabad	91
Himadri Cement Ltd, Vedadri, Jaggyyapet	247.5
India Cements Ltd, Chilamkur, Distt Cuddapha	1460
India Cements Ltd, Malkapur, Tandur	2900
India Cements Ltd, Vishnupuram Work, Wadapally, Mariyalaguda	3500
India Cements Ltd, Yeraguntla, Distt Cuddapha	1000 540(Clincker)
My home Industries Pvt. Ltd, Mellacheruvu, Nalgonda	3200
UltraTech Cements Ltd, Jaypee Balaji Cement, Budawada, Distt Krishna	5000
JSW Cement Ltd, Nandyal, Distt Kurnool	4800
JSW Cement Ltd, Bilakalagudur, Gadivemula	4800
KCP Ltd, Macherla, Distt Guntur	825
KCP Ltd, Muktyala, Distt Krishna	1860
KCP Ltd, Muktyala, Jaggayyapeta Unit II	3520
KakatiyaCement Sugar and Industries Ltd, Dondapadu, Melacheruvu	297

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
My Home Cement Industries Ltd, Mulakapalli, Distt Visakhapatnam (G).	2000
NCL Industries Ltd, Kondapalli, Distt Krishna (G).	990
Orient Cement Ltd,Devapur, Kasipet.	5000
Panyam Cements & Mineral Industries Ltd, Cement Nagar, Distt Kurnool.	1000
Parashakti Cement, Jettipalem, Distt Guntur.,	1260
Penna Cement Industries Ltd, Talaricheruvu,, Tadipatri, Distt Anantapur.	2200
Penna Cement Industries Ltd, Boyareddypalli, Distt Anantapur.	2000
Penna Cement Industries Ltd, Ganeshpahad Damarcherla	1200
Prism Cement Ltd, Kotapadu, Kolimigundla.	4800
Rain Commodities Ltd, (Rain Cements), Boincheruvupalli, Peapully, Distt Kurnool	2770
Rain Cements, Ltd, Ramapuram, Mellacheruvu	1500
Ramco Cement Ltd, (formerly, Madras Cements), Jayantipuram, K.S. Rajanagar, Distt Krishna.	3650
Ramco Cement Ltd, Vizag Grinding Unit, Distt Visakhapatnam.	950
Shree Jayajothi (Subs. of Myhome Cement Ind.) Yanakandala, Distt Kurnool.	3200
Shri Chakra Cements Ltd, Alamada, Distt Vizianagaram (G).	260
Shri Chakra Cements Ltd, Narsimhapuri, Distt Guntur.	310
Sagar Cements Bayyavaram, Distt Visakhapatnam (G)	200
Sagar Cements, Mattampally	2350
Sagar Cement Ltd, BMM Cement Anantapur,	1000
UltraTech Cements Ltd, (APCW), Tadipatri, Distt Anantapur.	9000
Zuari Cement, Krishnanagar, Yerranguntala, Distt Cuddapha.	3800
Zuari Cement, Ltd, Sitapuram Dondapadu Mellacheruvu	1200
Chemical	
Andhra Sugars Ltd, Saggonda, Distt West Godavari.	400 TPD (caustic soda) 99 (H_2SO_4)
Shree Rayalseema Alkalies & Allied Chem. Ltd, Gondiparla, Distt Kurnool.	156.95 (Total) 69.5 (caustic soda) 49.8 (Cl) 24.7 (HCl) 23.1 (KOH)
Shree Rayalseema High Strength Hypo Ltd, Gondiparla, Distt Kurnool.	14.85 (bleaching powder) 49.5 (H_2SO_4) 15 (Oleum)

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Ceramic	
Sentini Ceramica Pvt. Ltd, Kanukollu, Distt Krishna (JV with H R Johnson (I) Ltd)	58 mill. sq.m
Spartek Ceramics India Ltd, Narsingapuram, Distt Chittoor.	NA
Kajaria Ceramics Ltd, Vijayawada.	2.9 (mill. sq m)
Elcetrode	
Indus Elctrode Gundlapalli, Maddiapdumandal.	0.90
Magnarc Elcetrodes Pvt. Ltd, Pendurthy.	1.8
Fertilizer	
Agri Green Fertilizers & Chemicals Pvt. Ltd, Cuddapah.	30 (SSP)
Bhaskar Fertiliser (P) Ltd, Anantapur	45 (SSP)
Coromandel International Ltd, Visakhapatnam.	1300 (NP/ NPKs)
Coromandel International Ltd, Kakinada, Distt East Godavari.	1925 (DAP)
GDS Chemicals & Fert. Pvt. Ltd, Anakapalli, Visakhapatnam	36 (SSP)
K. P. R. Fertilizers Ltd, Biccavolu, E. Godavari	11300 (SSP)
Krishna Industrial Corpn. Ltd, Nidadavole, Distt West Godavari.	45 (SSP) 33.5 (H_2SO_4)
Nagarjuna Fertilizers & Chemicals Ltd, Kakinada, Distt East Godavari (Unit I & II)	1500 (Urea)
NG Fertilizers & Chemicals Pvt. Ltd, Kodurupadu, Distt Krishna	200 (SSP)
Prathyusha Chems and Fertilisers Ltd, Parwada, Visakhapatnam	100 (SSP)
Subhodaya Chemicals Ltd, Gauripatnam, Distt West Godavari	42.9 (SSP)
Pesticides	
Jayalakshmi Fertilizers, Tanuku, Distt West Godavari	2000
Glass	
Triveni Glass Ltd, Kondagudem, Distt West Godavari	10 (mill. sq. m)
Iron & Steel	
Visakhapatnam Steel Plant, Visakhapatnam	8856 (sinter) 3400 (pig iron) 6300 (crude/liquid steel)
Sponge Iron	
Amoda Iron and Steel Pvt. Ltd, Jayanthipuram, Jaggayyapet Mandal, Aggayyapet	60

(contd)

Table - 5 (concld)

Industry/plant	Capacity ('000 tpy)
Apple Industries Ltd, Dhiral, Anantapur	150
Maa Mahamaya Industries Ltd, Vizianagaram	112
Pushpit Steel Pvt. Ltd, Merlapaka,Yerpendu, Chittor	86.4
SLV Steels and alloys Pvt. Ltd, Anantapur	60
Sri Sai Sindhu Industries Ltd, Tadpatri	52.5
Steel exchange India Ltd, Srirampuram,Visakhapatnam	250
Sree Rayalseema Green Steloy Ltd, Gooty, Distt Anantapur	36
Pig Iron	
Rishrtriya Ispat Nigam Ltd, Vishakhapatanam, Andhra Pradesh	6300
Sathavahana Ispat Ltd, Haresamudram, Distt Anantapur	210
Pellets	
Essar Steel Ltd, Visakhapatnam	8000
Ferroalloys	
Berry Alloys Ltd, Kothavalasa, Distt Vizianagaram	40 (Fe-Mn) 32 (Si-Mn)
Deccan Ferro alloys (P) Ltd, Pendurthi, Visakhapatnam	30 (Si-Mn) 10(Fe-Mn)
FACOR Alloys Ltd, Shreeramnagar, Distt Vizianagaram	90.3
Jindal Stainless (Hisar) Ltd, Kothavalasa, Distt Vizianagaram	40
Maithan Alloy Ltd, Atchutapuram	120
Hira Elector Smelters Ltd, Bobbili, Distt Vizianagaram	NA
Nava Bharat Ventures Ltd, Paloncha	125
Rhodium Ferro-alloy Pvt. Ltd, Gollapuram	8
Siri Smelters & Energy Pvt. Ltd, Bobbili	8.5
Petroleum Refinery	
HPCL, Vizag	8300
ONGC, Tatipaka, Distt East Godavari	66

Note: *Data, not readily available for fertilizer and cement Industries on respective website, is taken from Indian Fertilizer Scenario, FAI Statistics, and Survey of Cement Industry & Directory, respectively.*