

STATE REVIEWS



Indian Minerals Yearbook 2014

(Part- I)

53rd 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

March, 2016

ANDHRA PRADESH

Mineral Resources

Andhra Pradesh is the leading producer of apatite, barytes, ball clay, dolomite, garnet, laterite, mica, limestone and vermiculite. The State is the sole producer of asbestos. It accounts for 94% barytes, 78% kyanite, 10% corundum, 61% ball clay, 20% limestone, 41% mica and 33% garnet 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, Khammam, Krishna, Kurnool, Nellore and Prakasam districts; **calcite** in Anantapur, Cuddapah, Kurnool and Visakhapatnam districts; **china clay** in Adilabad, Anantapur, Chittoor, Cuddapah, East Godavari, West Godavari, Guntur, Kurnool, Mahabubnagar, Nalgonda, Nellore, Rangareddy, Visakhapatnam and Warangal districts; **coal** in Adilabad, East Godavari and West Godavari, Karimnagar, Khammam and Warangal districts; **corundum** in Anantapur and Khammam districts; **dolomite** in Anantapur, Khammam, Kurnool and Warangal districts; **felspar** in Anantapur, Cuddapah, West Godavari, Hyderabad, Khammam, Mahabubnagar, Medak, Nellore, Rangareddy and Vizianagaram districts; **fireclay** in Adilabad, Chittoor, Cuddapah, East Godavari, West Godavari, Kurnool, Nalgonda and Srikakulam districts; **garnet** in East Godavari, Khammam and Nellore districts; **granite** in Anantapur, Chittoor, Cuddapah, Guntur, Karimnagar, Khammam, Krishna, Mahabubnagar, Medak, Nalgonda, Nellore, Prakasam, Rangareddy, Srikakulam, Vizianagaram and Warangal districts; **iron ore (hematite)** in Anantapur, Cuddapah, Guntur, Khammam, Krishna, Kurnool and Nellore districts; **iron ore (magnetite)** in Adilabad, Prakasam and Warangal districts; **lead-zinc** in Cuddapah, Guntur and Prakasam districts; **limestone** in Adilabad, Anantapur, Cuddapah, East Godavari, West Godavari, Guntur, Hyderabad, Karimnagar,

Krishna, Kurnool, Mahabubnagar, Nalgonda, Nellore, Rangareddy, Srikakulam, Visakhapatnam and Vizianagaram districts; **manganese ore** in Adilabad, Srikakulam and Vizianagaram districts; **mica** in Khammam and Nellore districts; **ochre** in Cuddapah, West Godavari, Guntur, Kurnool and Visakhapatnam districts; **pyrophyllite** in Anantapur district; **quartz/silica sand** in Anantapur, Chittoor, Cuddapah, West Godavari, Guntur, Hyderabad, Khammam, Krishna, Kurnool, Mahabubnagar, Medak, Nalgonda, Nellore, Prakasam, Rangareddy, Srikakulam, Visakhapatnam, Vizianagaram and Warangal districts; **quartzite** in Kurnool, Srikakulam, Visakhapatnam and Vizianagaram districts; **talc/soapstone/steatite** in Anantapur, Chittoor, Cuddapah, Khammam and Kurnool districts and **vermiculite** in Nellore and 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 and Visakhapatnam districts; **chromite** in Khammam and Krishna districts; **copper** in Guntur, Khammam, Kurnool and Prakasam districts; **diamond** in Anantapur, Krishna and Kurnool districts; **fuller's earth** in Medak and Rangareddy districts; **gold** in Anantapur, Chittoor and Kurnool districts; **graphite** in East Godavari, West Godavari, Khammam, Srikakulam, Visakhapatnam and Vizianagaram districts; **gypsum** in Guntur, Nellore and Prakasam districts; **kyanite** in Khammam, Nellore and Prakasam districts; **magnesite** in Cuddapah district; **marble** in Khammam district; **pyrite** in Kurnool district; **sillimanite** in West Godavari district; **silver** in Guntur district; **titanium minerals** in East Godavari, Krishna, Nellore, Srikakulam and Visakhapatnam districts; and **tungsten** in East Godavari district (Tables - 1 & 2).

Exploration & Development

The details of exploration activities conducted by various agencies for coal and other minerals during 2013-14 are furnished in Table - 3. ONGC & OIL continued its seismic survey & drilling for exploration of petroleum & natural gas during 2013-14. The details of exploration activities are furnished in Table - 4.

Table -1: Reserves/Resources of Minerals as on 1.4.2010 : Andhra Pradesh

Mineral	Unit	Reserves				Remaining resources						Total resources (A+B)	
		Proved STD 111	Probable STD121	STD122	Total (A)	Feasibility STD211	Pre-feasibility STD221	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
Apatite	tonnes	36019	-	1680	37699	-	-	-	-	200163	-	200163	237862
Asbestos	tonnes	5754	-	9028	14782	856	3117	9191	1500	27085	-	41749	56531
Ball clay	tonnes	6017412	-	1288720	7306132	1821233	2806267	9512513	2279330	27555824	-	43975167	51281299
Barytes	tonnes	29396236	79736	1845270	31321242	173429	4252061	2500159	387394	29632557	105721	37157193	68478435
Bauxite	'000 tonnes	-	-	-	-	-	-	-	188971	138120	288176	-	615267
Calcite	tonnes	3267	500	-	3767	-	-	104970	5200	122148	-	8795018	8798785
China clay	'000 tonnes	2524	339	2205	5068	683	1490	1147	691	61883	3088	69108	74176
Chromite	'000 tonnes	-	-	-	-	-	-	-	15	172	-	187	187
Copper													
Ore	'000 tonnes	-	-	-	-	686	666	105	5791	1000	-	8248	8248
Metal	'000 tonnes	-	-	-	-	6.88	9.12	1.05	97.45	8.32	-	122.82	122.82
Corundum	tonnes	-	-	-	-	5824	7	9282	-	62008	-	77121	77121
Diamond	carat	-	-	-	-	-	-	-	200483	1524317	98155	1822955	1822955
Dolomite	'000 tonnes	55507	2082	10708	68297	50324	2851	29135	132589	896855	1848	1114156	1182453
Felspar	tonnes	5469094	408487	2301765	8179346	2504362	274566	2181547	5476671	2975298	145995	13619215	21798561
Fireclay	'000 tonnes	548	647	381	1576	50	735	1314	908	18444	132	21638	23214
Fuller's earth	tonnes	-	-	-	-	-	-	-	-	25523983	-	25523983	25523983
Garnet	tonnes	2911387	4500	710000	3625887	9051	42033	-	8800000	6587776	-	15438860	19064747

Table - 1 (contd.)

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						
STATE REVIEWS														
Gold														
Ore (primary) tonnes		-	-	-	655133	-	889515	8059000	55000	2616699	-	12275347	12275347	
Metal(primary)tonnes		-	-	-	2.45	-	3.57	16.93	0.17	12.60	-	35.72	35.72	
Granite														
(Dim. stone) '000 cu m		-	-	-	-	-	-	-	-	2405890	-	2405890	2405890	
Graphite tonnes		-	-	-	-	-	1135	-	124759	301306	-	427200	427200	
Gypsum '000 tonnes		-	-	-	-	-	-	-	-	404	-	404	404	
Iron ore (hematite) '000 tonnes		60038	58011	34167	152216	551	20988	377	4624	169955	291	229261	381477	
Iron ore (magnetite) '000 tonnes		-	-	-	43034	-	-	13800	1266666	140027	14	1463541	1463541	
Kyanite tonnes		-	-	-	-	-	399	-	-	80353829	-	80354228	80354228	
Laterite '000 tonnes		4349	2172	6942	13463	1830	60	-	1107	6895	277	12794	26257	
Lead-zinc														
Ore '000 tonnes		-	-	-	-	-	-	1000	4159	17530	-	22689	22689	
Lead metal '000 tonnes		-	-	-	-	-	-	28.70	119.53	688.65	-	836.88	836.88	
Zinc metal '000 tonnes		-	-	-	-	-	-	12.40	43.57	7.19	-	63.16	63.16	
Limestone '000 tonnes		2483095	581935	983048	4048078	311682	64645	215847	1075504	28112011	3147926	33388300	37436378	
Magnesite '000 tonnes		-	-	-	-	-	-	-	-	80	-	80	80	
Manganese ore '000 tonnes		1719	596	1841	4156	412	130	188	4176	7877	410	13444	17598	
Marble '000 tonnes		-	-	-	-	-	-	-	-	3	-	3	3	
Mica tonnes		162325	15247	2790	180362	7794	5101	3750	5502	18277	-	40424	220786	

(Contd.)

Table - 1 (concl.)

Mineral	Unit	Reserves					Remaining resources					Total resources (A+B)		
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility STD221	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)	
			STD121	STD122										STD222
Ochre	tonnes	1692839	344121	631277	2668237	-	97810	1199762	347681	-	6569575	-	8214828	10883065
Pyrite	'000 tonnes	-	-	-	-	-	-	-	-	-	880	-	880	880
Pyrophyllite	tonnes	245019	41841	171143	458003	121475	33360	-	-	75201	662193	-	892229	1350232
Quartz- silica sand	'000 tonnes	33590	3320	35772	72682	16664	6242	25109	5404	10965	65867	6099	136350	209032
Quartzite	'000 tonnes	2114	406	2131	4651	548	1009	7481	-	4390	5209	295	18932	23583
Sillimanite	tonnes	518000	-	170000	688000	-	-	-	-	7430300	1526200	-	8956500	9644500
Shale	'000 tonnes	14992	76	263	15331	-	-	245	-	-	252	83	580	15911
Slate	'000 tonnes	-	-	-	-	-	113	1187	-	-	1069	-	2369	2369
Silver														
Ore	tonnes	-	-	-	-	-	-	-	-	-	16950000	-	16950000	16950000
Metal	tonnes	-	-	-	-	-	-	-	-	-	128.13	-	128.13	128.13
Talc/soapstone/ steatite	'000 tonnes	1031	1044	3060	5135	71	168	1187	-	369	3777	537	6109	11244
Titanium minerals	tonnes	-	-	-	-	-	-	-	-	-	76702509	-	76702509	76702509
Tungsten Ore Contained	tonnes	-	-	-	-	-	-	-	3640000	4700800	5952500	509000	14802300	14802300
WO ₃	tonnes	-	-	-	-	-	-	-	5096.00	6574.64	8273.65	318.28	20262.57	20262.57
Vermiculite	tonnes	102058	24593	50939	177590	1912	3981	2750	35195	9878	119270	3600	176586	354176

Figures rounded off.

* Resources of ilmenite, rutile, leucosene and zircon as per Department of Atomic Energy are provided in the respective Mineral Reviews.

The proved and indicated balance recoverable reserves of crude oil and natural gas as on I.4.2014 in the State are 11.45 million tonnes and 48.20 billion cu m, respectively.

STATE REVIEWS

Table – 2: Reserves/Resources of Coal as on 1.4.2014 : Andhra Pradesh

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total/Godavari Valley	9729.25	9670.43	3068.47	22468.15

*Source: Coal Directory of India, 2013-14.***Table – 3 : Details of Exploration Activities in Andhra Pradesh, 2013-14**

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Khammam (Godavari Valley Coalfields)	Bugga- Khammamtoгу sector	1:10000	0.75	3	1076.55	-	Regional exploration G-2 stage continued with the objectives to explore and evaluate coal resource potentiality of Barakar coal seams already established in the Manuguru mining block. A total of 1076.55 m was drilled in boreholes GBK-4 to 6 of which 847 m were geophysically logged. In mapped area, seven to nine Barakar coal /carbonaceous shale bands varying in thickness from 0.50m to 4.80m were intersected between 37.10m and 516.35m depths.
-do-	Pagaderu (west) sector	1:10000	3	4	1230.3	-	Regional exploration G-2 stage was continued in the dip side of Manuguru mining block and northeast of Bugga-Khammamtoгу sector to establish the dip continuity of the Barakar and Lower Kamthi seams. A total of 1230.3 m was drilled in four boreholes GPDW- 3 to 6 of which 654 m was geophysically logged. In mapped area, twenty seven Lower Kamthi coal/ carbonaceous shale bands varying in thickness from 0.5 m to 3.7 m and eight Barakar coal / carbonaceous shale bands varying in thickness from 0.55 m to 1.70 m were intersected between 11.75 m and 447.28 m depths.
-do-	Pagaderu (east) sector	-	-	1	294.5	-	Regional exploration G-2 stage was initiated in the northern side of Manuguru mining block and adjacent to Pagaderu (west) sector to establish the dip continuity of the Barakar and Lower Kamthi seams. A total of 294.50 m has been drilled in borehole GPDE-1. Thin coal seams ranging in thickness from 0.5 m to 1.2 m were intersected from a depth of 14.45 m to 285.20 m. Investigation is under progress.
Adilabad (Godavari Valley Coalfields)	Khairi Sector northwestern part of Dorli- Bellampalli	1:12500	100	1	-	-	Area mapped in Khairi Sector, north-western part of Dorli-Bellampalli coal belt in the northwestern margin of Main basin of Godavari valley Coalfield to examine the coal for delineating its extension below Deccan Trap cover and

(Contd.)

STATE REVIEWS

Table – 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							identifying Barakar coal seams in the northwestern side of Dorli mining block.
Chromite							
Khammam	Chimalpahad	1:50000	300	-	-	197	Reconnaissance stage (G-4) investigation was carried out to delineate mineralised zones of chromite and PGE and associated minerals. The area exposes lithounits of the Chimalpahad Ultramafic Complex represented by anorthosite, leucogabbro, gabbro and pyroxenite which are intruded within amphibolites of Khammam Schist Belt. The chromite occurs as podiform lenses within the ultramafic units viz. dunite, pyroxenite, websterite and talc-tremolite schist. The zones rich in mafic and felsic layering in the periphery of the Chimalpahad Ultramafic Complex near Burdharaghavpuram, Chimalpahad, Rangapuram, Ramanapalem areas are favourable locations to assess PGE, yet to be confirmed by analytical data. A zone of Ti-V magnetite has been traced near Rampuram Tanda, Vinobanagar, Rangapuram, Bajumallayagudem and Burdharaghavpuram villages which may be favourable locales for PGE mineralisation. These bodies are associated with pyroxenite and leucogabbro of Chimalpahad Ultramafic Complex, having extension over a strike length of approx. 200-300 m. V-Ti magnetite is confirmed by laboratory data which reveal Fe ₂ O ₃ up to 69.33%, TiO ₂ up to 24.41%, Cr ₂ O ₃ up to 0.26% and vanadium up to 1470 ppm.
	Ultramafic	1:2000	80				
	Complex						
Diamond							
Mahbubnagar and Rangareddy	Koikonda-Devarakadra Complex	1:50000	1440	-	-	310	Reconnaissance stage (G-4) investigation was carried out to locate kimberlite/lamproite. An integrated structural lineament map was prepared with the aid of satellite imagery, aerial photographs, toposheet and geological map. The heavy mineral study indicated assemblages of magnetite, spinel, epidote, garnet, zircon, amphibole, ilmenite, goethite and hematite which are typical of granitoids and gneiss-migmatite provenance. A total of fifty-seven suspected kimberlite indicator minerals (KIM's) have been submitted for EPMA. Among the 34 grains studied under EPMA, ilmenites, one diopside, one spinel, one garnet grain show kimberlite affinity. EPMA data confirmed 16 grains (garnet, diopside, spinel and ilmenite) as KIM's. Garnet is pyrope in composition which have high Mg and falling in the field of G9 garnet field on binary plot of conventional Cr ₂ CO ₃ vs CaO diagram. G9 garnet is Iherzolitic origin. Ilmenites have high Mg and are falling in the field of kimberlitic-ilmenite field on

(Contd.)

STATE REVIEWS

Table – 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							binary plot of MgO vs TiO ₂ for kimberlite & non-kimberlitic ilmenite. Diopside is falling on the Cr diopside field for kimberlite xenoliths and xenocrysts on binary plot of Ca/(Ca+Mg) vs Na ₂ O. The spinel grains are rich in chromium indicating mantle origin.
Diamond							
Mahabubnagar, Rangareddy	Jadcherla- Yeljal Block and Hyderabad	1:50000 REC Survey	720 680	-	-	148 (Total)	Reconnaissance stage (G-4) investigation was carried out to locate kimberlite/lamproite bodies. The investigation area forms intervening block between Narayanpet Kimberlite Field to the West and Ramadugu and Krishna lamproite Fields to the East. The area exposes the rocks of Dharwar Supergroup of Archean age and Peninsular Gneissic Complex (PGC)-II of Archean to Paleoproterozoic age. Both acid and basic igneous rocks intrude the above pile of rocks. A lamprophyre (?) dyke having dimension of 50 m x 30 m, located 1.5 km north of Raghavapuram, trending N-S has been recorded. Three kilometres SE of Bodijanampeta, another lamprophyre (?) body of dimension 150 m x 80 m was noticed.
Gold							
Anantapur	Area between Tanakallu and Kandukuru	1:1000	0.9	-	-	352	Reconnaissance stage (G-4) investigation for gold and associated minerals was carried out in the southern part of Kadiri schist belt to identify auriferous zones in the area. The Kadiri schist belt consists of metamorphosed acid to basic volcanic rocks which are intruded by younger granites, quartz veins/reefs, pegmatite and basic dykes. The Kottapalle block comprises meta-andesite, meta-rhyodacite and hornblende schist intruded by granite & gabbroic/ dolerite dykes whereas Kandukuru block exposes older schistose rocks (metabasic/amphibolites). The sulphide mineralisation mainly pyrite, chalcopyrite and sphalerite manifested in the form of fine disseminations and veins is noticed in all the rocks of schist belt. The chemical analyses of the samples received so far have yielded >25 ppb to 65 ppb of Au (65 ppb in one sample of quartz feldspar porphyry, south of Kamatampalle). In the Kottapalle block the meta-andesite and hornblende schist contact is sheared and sporadic sulphide mineralisation noticed, manifested mostly in the form of pyrite specks. In Kandukuru block, no sulphide mineralisation or wall rock alterations has been noticed. Analytical results of 22 samples for bed rock / C horizon are received and all the samples have analysed Au<25 ppb. The analytical results pertaining to Kottapalle and Kandukuru blocks are not encouraging.

(Contd.)

STATE REVIEWS

Table – 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Limestone							
Cuddapah and Kurnool	Area between Kolimigundala and Jamalamadugu	1:12500	91	-	-	202	Reconnaissance stage investigation (G-4) was carried out to delineate the cement-grade limestone in the area. The Narji Limestone Formation of Kurnool Group is the dominant lithology observed in the area disconformably underlain by Gandikota Quartzite of Cuddapah Supergroup and conformably overlain by Owk Shale which is in turn overlain by plateau quartzite of Paniam Formation. In the studied area, limestone is exposed along 18 km long and 60m wide canal with vertical thickness of 12-15 m with approximate 2-6 m overburden. Analytical results of 92 BRS of bedded massive limestone show high CaO% (average 44.18%) and corresponding low SiO ₂ % (16.16%). The massive limestone is cement grade in nature.
Nalgonda and Guntur	West of Nalgonda and Guntur	1:12500	98	-	-	201	Reconnaissance stage investigation (G-4) was carried out to delineate the cement grade limestone in the area. In the studied area, the Narji Limestone is lying over the Banganapalli Quartzite and shale. The boundary between bedded and massive limestone is delineated. Thickness of the bedded limestone is <1 m to ~1.5 m near the contact with shale and the thickness increases towards south. Thickness of the massive limestone is generally 1 to 5 m near Mudimanikyam and it ranges more than 5 m at places. The analytical results of 62 BRS, 8 PCS and 2 PTS show high CaO% (42% to 49.18%) and these are of cement grade to marginally cement grade in nature due to variation of other oxides.
Guntur	Area between Mittagudupadu- Goli and Jettipalem	1:5000	9	33	1650	87	Prospecting stage investigation (G-3) was carried out to assess the potentiality of limestone. Litho-units belonging to Narji Formation of Kurnool Group, viz. (i) Lower purple limestone, (ii) Middle massive limestone and (iii) Upper flaggy limestone, are exposed in the area. A total cumulative drilling of 1650 m in 33 boreholes has been completed. Core and DTH drilling revealed that the thickness of massive and variegated limestone units which progressively increases from west to east and north-eastern part of the area is about 18 to 25 m. The analytical results in respect of massive/variegated limestone are encouraging and the deposit may be proved useful for the development of cement industry in the area.

(Contd.)

STATE REVIEWS

Table – 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Phosphorite							
Kurnool and Ananthpur	Area between Ankireddipalle and Owk	1:25000	122	-	-	324	Reconnaissance stage (G-4) investigation was carried out for delineating the potential zones of phosphorite. The rocks exposed in the area are of Tadpatri and Gandikota formations of Chitravathi Group belonging to Mesoproterozoic Cuddapah Supergroup and Banganapalle Quartzite, Narji Limestone, Owk Shale, Paniam Quartzite of Neoproterozoic Kurnool Group. The Owk shales host the phosphatic bands. The Owk Formation comprises lower calcareous khaki-green shale and upper non-calcareous variegated shale. The phosphatic bands are mainly associated with the khaki-green shale at the interface of khaki-green and variegated shale. Two types of phosphatic bands have been delineated viz. (i) The interbanded phosphatic band occurring between the khaki green shale and upper variegated shale and (ii) Phosphatic bands occurring within khaki-green shale, which are discontinuous and lensoidal in nature. Analytical results of 118 BRS and 18 PTS collected during 2012-13 & 2013-14 show 5.01- 19.08% and 5.6 to 15.1% of P ₂ O ₅ respectively.
Platinum Group of Element							
Prakasam	Chimakurthi Igneous Complex	1:12500	85	-	-	289	Reconnaissance stage investigation (G-4) was carried out in Chimakurthi Igneous Complex to delineate the PGE potential zones. Litho packages observed are Khondalite Group consisting of quartzite and garnet-sillimanite-cordierite-K-feldspar-quartz gneiss, granulite and meta-pelite, Chimakurthi Igneous Complex consisting of pyroxenite, leucogabbro/norite, gabbro/norite, nepheline syenite and quartz monzonite and Peninsular Gneissic Complex comprising of hybrid granite gneiss/grey migmatite. EPMA study of sulphide minerals of Chimakurthi Igneous Complex indicates presence of pyrite, pentlandite and chalcopyrite. Chrome spinels are also present in stream sediments. Out of 50 stream sediment samples collected during FS 2012-13, two samples gave anomalous values of "REE 753.77 ppm & 1866.71 ppm.
RM/REE							
Nellore	Area between Vutukuru and Kalichedu	1:12500	155	-	-	318	Reconnaissance stage investigation (G-4) was carried out to delineate potential areas for REE and other strategic minerals. A total of thirty one pegmatite bodies within migmatitised pelitic schist, quartzite, quartz-mica schist having variable strike

(Contd.)

STATE REVIEWS

Table – 3 (Concl.d.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							length extending from 1 to 120 m with a width ranging from 1 to 50 m and 26 aplite bodies within amphibolite and quartzite having variable length ranges from 1 to 60 m with a width ranging from 1 mm to 30 m have been delineated. EPMA study reveals presence of columbite-tantalite mineral within the pegmatite. Analytical results of 116 geochemical samples (77 BRS & 39 SSS) show total REE, LREE & HREE values ranging from 2 to 572 ppm, 1 to 500 ppm and 0.32 to 250 ppm, respectively.

Table – 4 : Exploration of Petroleum & Natural Gas in Andhra Pradesh during 2013-14

Agency	Drilling					
	Seismic Survey		Exploratory		Development	
	2D(GLKM)	3D(SQKM)	Wells (No)	Meterage (km)	Wells (No)	Meterage (km)
ONGC	-	53	7	22.237	12	35.982
OIL	266	131	-	-	-	-

Figures rounded off.

Production

The value of mineral production in Andhra Pradesh at ₹ 24,379 crore in 2013-14 decreased by 8% as compared to that in the previous year. Almost all important minerals are produced in Andhra Pradesh. The principal minerals produced in the state were coal, natural gas (ut.), limestone, petroleum (crude) and barytes which together accounted for 42% of total value of mineral production in the state during 2013-14. Coal contributed 30% and minor minerals about 57% of the total value of mineral production in the state.

Andhra Pradesh claims the fourth position among the states in the country with a contribution of about 9% to the total value of the mineral production in the country. It was the sole producer of apatite, asbestos and mica (crude) and also contributes almost entire output of barytes in India. In addition, it was the leading producer of sand (others), vermiculite, laterite, quartzite, sillimanite, quartz, silica sand, and

limestone with a share of 80%, 78%, 75%, 68%, 65%, 63%, 43%, and 21% in the total production of respective minerals in the country. It is also the second leading producer of feldspar (35%), dolomite (19%), garnet (abrasive) (18%) and ball clay and ochre (7% each).

Among the minerals produced in the state, the output of apatite increased to more than doubled while that of sillimanite increased 66%, quartzite 63%, mica (crude) 37%, vermiculite 23%, ochre 14%, shale 10%, calcite 9% and sand (others) 8% percent. However, a decline in production was observed in garnet (abrasive)1%, feldspar, quartz and kaolin 2% each, coal 5%, natural gas (ut.), limestone and manganese ore 6% , dolomite 11%, clay (others) 14%, laterite 19%, ball clay 25%, steatite 27%, silica sand 33%, fireclay and iron ore 36% each, barytes 37% and asbestos 42 % as compared to the output in the previous year (Table-5).

STATE REVIEWS

**Table – 5 : Mineral Production in Andhra Pradesh, 2011-12 to 2013-14 (P)
(Excluding Atomic Minerals)**

(Value in ₹ '000)

Mineral	Unit	2011-12			2012-13			2013-14 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		621	241467939		774	264533055		660	243785335	
Coal	'000t	50	52211	90008100	50	53190	91695800	49	50469	73998000
Natural Gas (ut.)	m c m	-	1363	9804492	-	1249	10329390	-	1171	9684320
Petroleum(crude)	'000t	-	305	5541226	-	295	5361853	-	297	5398204
Iron Ore	'000t	40	1776	691697	41	1176	605107	31	753	404918
Manganese Ore	t	39	327387	588258	42	367445	554123	33	343626	679480
Apatite	t	1	2917	6164	1	572	1208	1	1300	2768
Asbestos	t	3	276	13347	3	389	17057	3	227	8823
Ball Clay	t	14	276799	88705	13	184345	99828	13	138702	71471
Barytes	t	11	1768925	1681549	20	1782079	5309333	20	1131254	3601316
Calcite	t	-	-	-	1	1790	895	1	1960	980
Clay (others)	t	10	99919	8502	12	158674	18029	12	136295	14644
Corundum	kg	-	-	-	1	-	-	-	-	-
Dolomite	t	39	1299126	431236	41	1547613	542903	42	1376901	448911
Felspar	t	23	289261	79262	40	504000	160888	31	495858	151397
Fireclay	t	16	55578	10103	15	49478	10512	10	31686	7178
Garnet (abrasive)	t	2	54213	262194	2	83683	497499	2	82804	699850
Kaolin	t	11	75115	11775	11	53057	8945	9	51957	9381
Sillimanite	t	-	31992	304402	-	23896	205289	-	39723	252757
Laterite	t	26	1800704	260228	44	3227646	447898	40	2615247	397978
Limestone	'000t	97	54602	7777269	114	63438	9677079	101	59354	8889845
Lime Kankar	t	2	830	355	2	275	138	-	-	-
Mica (crude)	t	29	1784	61967	31	1177	37988	32	1610	46226
Mica (waste & scrap)*	t	-	7313	-	-	7415	-	-	7609	-
Ochre	t	8	189087	32921	12	97581	21953	13	111547	19213
Pyrophyllite	t	-	-	-	1	176	141	2	1675	1260
Quartz	t	74	361566	73655	126	893670	198156	97	877036	198503
Quartzite	t	10	98955	44330	18	221885	96019	14	360615	165519
Silica Sand	t	65	1582312	142157	74	2128989	325572	54	1426819	254017
Sand (others)	t	8	2157012	134198	8	1874624	150997	8	2032004	216617
Shale	t	4	115998	8833	6	142617	12628	7	157373	15916
Talc/steatite/ soapstone	t	35	91646	34941	39	85117	30980	29	62239	29293
Vermiculite	t	4	8652	3631	6	6474	1885	6	7974	3588
Minor Minerals@		-	-	123362442	-	-	138112962	-	-	138112962

*Note: The number of mines excludes petroleum (crude), natural gas (utilised) and minor minerals.*** Includes mine waste obtained while dressing of crude mica.**@ Figures for earlier years have been repeated as estimates, wherever necessary, because of non-receipt of data.*

The value of production of minor minerals was estimated at ₹13,811 crore for the year 2013-14.

The number of reporting mines in the state was 660 in 2013-14 as against 774 in the previous year.

The index of mineral production in Andhra Pradesh (base 2004-05=100) was 133.7 in 2013-14 as compared to 141.8 in the previous year.

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, the principal large and medium scale mineral based industries in the organised sector in the State are given in Table - 6.

STATE REVIEWS

Table – 6 : Principal Mineral-based Industries in Andhra Pradesh

Industry/plant	Capacity ('000 tpy)
Abrasives	
Grindwell Norton Ltd, Renigunta, Distt. Chittoor.	5
Aluminium Foil	
Indal, Kollur.	3
Asbestos Products	
Bhagyanagar Wood Plast Ltd, Nandikandi, Distt. Medak.	60
Hyderabad Industries Ltd, Sanathnagar, Distt. Rangareddy.	160
Hyderabad Industries Ltd, Thimmapur.	230
Hyderabad Industries Ltd, Ibrahimpatnam, Distt. Krishna.	45
J.J. Spun Pipe Industries, Arsapalli, Distt. Nizamabad.	4.5
Ramco Industries, Ibrahimpatnam, Distt. Krishna.	225
Visaka Industries Ltd, Medak.	36
Bleaching Clay	
Ashapura Clay Tech. Ltd, Dharur, Distt. Rangareddy.	20 (Fuller's earth granules) 15 (Bentonite granules)
Cement	
Andhra Cements Ltd, Gandhi Nagar, Vijayawada (G).	240
Andhra Cements Ltd (Visaka Cement Works), Durga Nagar, Distt. Visakhapatnam (G).	620
Andhra Cements Ltd, Durga Cement Works, Dacheipalli, Distt. Guntur.	800
Anjani Portland Cements Ltd, Anjanipuram, Distt. Nalgonda.	1160
Bhagya Lakshmi Cement Ltd, Vajinapalli, Distt. Nalgonda.	99
CCI Ltd, Adilabad, Distt. Adilabad.	400
CCI Ltd, Tandur, Distt. Rangareddy.	1000
Chanakya Cements Ltd, Wadapalli, Distt. Nalgonda.	400
Dalmia Cement (Bharat) Ltd, Cuddapah.	2500

(Contd.)

Table - 6 (Contd.)

Industry/plant	Capacity ('000 tpy)
Deccan Cements Ltd, Bhavanipuram, Distt. Nalgonda.	797
Grey Gold Cements Ltd, Mattampally, Dist. Nalgonda.	50
Hemadri Cements Ltd, Vedadri, Distt. Krishna.	240
Jaypee Balaji Cement, Budawada, Dist. Krishna.	5000
Kesoram Cement, Basantnagar, Distt. Karimnagar.	1500
Koramandal Cements Ltd, Ramapuram, Distt. Nalgonda.	66
Kakatiya Cement and Sugar Industries Ltd, Dondapadu, Distt. Nalgonda.	302
Keerthi Industries Ltd, Mellacheruvu, Distt. Nalgonda.	297
Lanco Industries Ltd, Chittoor.	80
Madras Cements Ltd, Jayantipuram, Distt. Krishna.	3600
Maata Cements Ltd, Doppierla, Distt. Visakhapatnam.	99
Mancherial Cement Co. (P) Ltd, Mancherial, Distt. Adilabad.	150
My Home Cement Industries Ltd, Mellacherur, Distt. Nalgonda.	3200
My Home Cement Industries Ltd, Visakhapatnam (G)	2000
Nagarjuna Construction Co. Ltd, Rachorla, Distt. Kurnool.	198
Orient Cement, Devapur, Distt. Adilabad.	3000
Panyam Cements & Mineral Industries Ltd, Cement Nagar, Distt. Kurnool.	531
Penna Cement Industries Ltd, Talaricheruvu, Tadipatri, Distt. Anantapur.	1800
Penna Cement Industries Ltd, Boyareddy Palli, Distt. Anantapur.	2000
Penna Cement Industries Ltd, Tandur, Distt. Rangareddy.	2000
Penna Cement Industries Ltd, Ganeshpahad, Distt. Nalgonda.	1200

(Contd.)

STATE REVIEWS

Table - 6 (Contd.)

Industry/plant	Capacity ('000 tpy)
Rain Commodities Ltd (Rain Cements), Ramapuram, Distt. Nalgonda.	1000
Rain Commodities Ltd (Rain Cements), Boicheruvupalli, Distt. Kurnool.	2160
Sagar Cements Ltd, Mallapally, Distt. Nalgonda.	198
Shri Chakra Cements Ltd, Guntur.	698
Shez Cements Ltd, Chintalapalem, Distt. Nalgonda.	200
The India Cements Ltd, Chilamkur, Dist. Cuddapah.	1460
The India Cements Ltd, Malkapur, Distt. Rangareddi.	2400
The India Cements Ltd, Yeraguntla.	730
The India Cement (Raasi Cements), Wadapally, Distt. Nalgonda.	2500
The KCP Ltd, Macherla, Distt. Guntur.	830
The KCP Ltd, Muktyala, Distt. Krishna.	1520
Toshali Cement Ltd, Visakhapatnam.	132
Ultra-Tech Cements Ltd (APCW), Tadipatri, Distt. Anantapur.	5600
Visaka Cement Industries Ltd, Malkapur, Distt. Rangareddy.	1120
Zuari Cements Ltd (Sri Vishnu Cements Works), Dondapadu, Sitapuram, Distt. Nalgonda.	1200
Zuari Cement, Krishnanagar, Distt. Cuddapah.	2200
Chemical	
A.P. Carbides Ltd, Kurnool.	23 (calcium carbide)
Andhra Sugars Ltd, Saggonda, Distt. West Godavari.	132 (caustic soda) 99 (H ₂ SO ₄)
Shree Rayalseema Alkalies & Allied Chem. Ltd, Gondiparla, Distt. Kurnool.	69.5 (caustic soda) 49.8 (Cl) 24.7 (HCl) 23.1 (KOH)
Shree Rayalseema High Strength Hypo Ltd, Gondiparla, Distt. Kurnool.	9 (bleaching powder) 45 (H ₂ SO ₄) 15 (Oleum)
Ceramic	
Hindustan Sanitaryware & Industries Ltd, Bibinagar, Distt. Nalgonda.	18

(Contd.)

Table - 6 (Contd.)

Industry/plant	Capacity ('000 tpy)
Montana International Ltd, Faralwadi, Distt. Medak.	3.6
RAK Ceramics India Pvt Ltd, Jaggammagaripeta, Distt. East Godavari.	NA
Restile Ceramics Ltd, Mikapur.	1.4 (mill. sq m)
Sentini Ceramics Pvt Ltd, Kanukollu, Distt. Krishna.	75
Spartek Ceramics India Ltd, Narsingapuram, Distt. Chittoor.	NA
Fertilizer	
Agri Green Fertilizers & Chemicals Pvt Ltd, Cuddapah	30 (SSP)
Coromandel Fertilizer Ltd, Visakhapatnam.	312 (N ₂) 312 (P ₂ O ₅)
Coromandel Fertilizers Ltd, (Formerly Godavari Fertilizers & Chemicals Ltd), Kakinada, Distt. East Godavari.	243 (N ₂) 615.8 (P ₂ O ₅)
Krishna Industrial Corpn. Ltd, Nidadavole, Distt. West Godavari.	45 (SSP) 33.5 (H ₂ SO ₄)
Nagarjuna Fertilizers & Chemicals Ltd, Kakinada, Distt. East Godavari. (Unit I & II)	699.2 (N ₂)
Subhodaya Chemicals, Govaripatnam, Distt. West Godavari.	50 (SSP)
The Andhra Sugars Ltd, Kovvur, Distt. West Godavari.	66 (SSP) 45 (H ₂ SO ₄)
Pesticides	
Jayalakshmi Fertilizers, Tanuku, Distt. West Godavari.	2.4
Glass	
Ceat Ltd, Thimmapur, Distt. Mahabubnagar.	10
Triveni Glass Ltd, Kondagudem, Distt. West Godavari.	10 (mill. sq m)
Iron & Steel	
Visakhapatnam Steel Plant, Visakhapatnam.	8856 (sinter) 3400 (pig iron) 2656 (saleable steel) 3000 (crude/liquid steel)
Pig Iron	
Lanco Industries Ltd, Rachaguneri, Distt. Chittoor.	225

(Contd.)

STATE REVIEWS

Table - 6 (Contd.)

Industry/plant	Capacity ('000 tpy)
Mid-west Iron & Steel Co Ltd, Dusi, Distt. Srikakulam.	90
Sathavahana Ispat Ltd, Haresamudram, Distt. Anantapur.	120
Pellets	
Essar Steel Ltd, Visakhapatnam.	8000
Sponge Iron	
Ashirwad Steels & Ind. Ltd, Veliminedu, Distt. Nalgonda.	60
Anand Metallics & Power Pvt. Ltd, Kodi Cherla, Distt. Mahabubnagar.	NA
Bright Star Iron & Steel Ltd, Mekaguda, Distt. Mahabubnagar	NA
Binjusaria Sponge & Power Pvt. Ltd, Farooq Nagar, Distt. Mahabubnagar.	30
GSAL (India) Ltd, Srirampuram, Distt. Vizianagaram.	220
Kumar Metallurgical Corpn. Ltd, Nalgonda.	60
Lakshmi Gayatri Iron & Steel, Kethepally Dist. Nalgonda.	NA
Reactive Metals of India Ltd, Appajipally Distt. Mahabubnagar.	100 (TPD)
Sunder Steels Ltd, S.D. Road, Secunderabad.	24
Sponge Iron India Ltd, Paloncha, Distt. Khammam.	60
Sree Rayalseema Green Steloy Ltd, Gooty, Distt. Anantapur.	36
Sri Venkateshwara Sponge & Power Pvt Ltd, Merlapaka, Distt. Chittoor.	90
Maa Mahamaya Industries Pvt Ltd, Relligaurammepeta, Distt. Vizianagaram.	NA
Ferro-alloys	
Andhra Ferro Alloys Ltd, Kothavalasa, Distt. Vizianagaram.	20
Deccan Ferro alloys (P) Ltd, Pendurthi, Visakhapatnam.	13

(Contd.)

Table - 6 (Concl.)

Industry/plant	Capacity ('000 tpy)
FACOR, Ltd, Shreeramnagar, Distt. Vizianagaram.	72.5
Jindal Stainless Ltd (ferro alloys division), Kothavalasa, Distt. Vizianagaram.	40
Metkore Alloys & Ind. Ltd (GMR Ferro alloys & Ind. Ltd) Ravivalasa, Distt. Srikakulam.	25
Nav Bharat Ferro Alloys Ltd, Paloncha, Distt. Khammam.	125
Shree Sarda Alloys Ltd, Ravivalasa, Distt. Srikakulam.	6
Shree Raghvendra Ferro alloys Pvt Ltd, Nalgonda.	15
VBC Ferro Alloys Ltd, Rudraram, Distt. Medak.	48
Refractory	
Carborandum Universal Ltd, Visakhapatnam.	3.6
MPR Refractories Ltd, Medak.	9.5
RHI Clasil Ltd, Venkatapuram, Visakhapatnam.	50
Raasi Refractories, Narketapally, Distt. Nalgonda.	35
Vesuviusindia Ltd, Visakhapatnam.	24
Lead-zinc	
HZL, Vizag Zinc Smelter, Visakhapatnam.	56 (Zn)
Petroleum Refinery	
HPCL, Vizag.	8300
ONGC, Tatipaka	66

Note: As per All India Graphite Crucible Manufacturers Association, Rajahmundry, about 44 graphite crucible plants operate in the region in small and medium scale. However, information on installed capacity is not available.

